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WORLD

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Company wins PABX battle with Telecom

By Noel Bennett

SYDNEY — Tytel Pty Ltd has finally won unrestricted approval from Telecom to supply its 800 series Lanx local-area network exchange.

The product, which is designed to serve both PABX and small key requirements, can handle between two and 60 extensions and during a period of restricted authority to connect, the company has installed 60 systems, ranging from three to 40 extensions.

The managing director, Chris Tyree, said the 800 series Lanx has been defined as a PABX and not as a key system. Accordingly, the company can now sell the product as a PABX, but not as a small key system until next July when restrictions are lifted.

Tyree has had a long battle with Telecom to obtain approval to connect his products to the network.

The problem began when it produced a PABX product which competed with Telecom's Commander small key system and which the carrier (and authority) refused to approve.

This dispute continued with a claim by Tytel that Telecom was using unfair pricing to force certain of Tytel's products off the market.

This situation has apparently been resolved with Telecom now no longer exempt from sales tax provisions.

Tyree said one of the particular attributes of the 800 Series Lanx was its ability to be easily expanded by adding more handsets to the Lan cable as a business grew, avoiding the continual installation of a new central hardware.

This derived from the basic operational philosophy — no central switching equipment is required as each handset contained its own computer-controlled switching mechanism, attached to a central Lan cable.

Tyree said even if one handset was disconnected, the system continued to work without interruption and the units themselves offered a range of sophisticated dialling features that were normally only available on much larger system.

Tytel claims to be the only Australian-owned company which designed and manufactured telephone systems and telephones for business use.

***Chris Tyree** . . . 800 Series can be expanded*

OTC's big profit jump

CANBERRA — OTC pushed after-tax profits up by 29 per cent to a record $A103.6 million for the 1987-88 financial year derived from a 16 per cent boost in overall revenues to $A1.16 billion. OTC claims that record financial results were achieved while still retaining its ranking as the world's lowest-cost international communications service provided over comparable distances.

This low cost is underlined by revenues per employee jumping 19 per cent to $A574,000.

The carrier's annual report indicates that the greatest part of its revenue was from international telephone services where income totalled $A984 million. The increase of $A180 million achieved in this area was made despite adverse foreign exchange conditions and price reductions in real terms on major traffic streams.

Dividends paid to the Commonwealth totalled $A46 million, up from $A39.77 million in 1987.

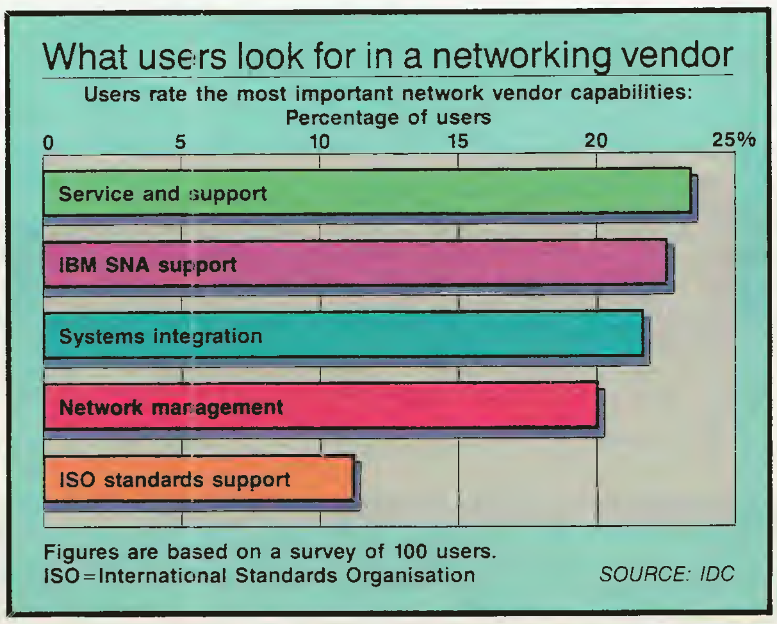
The largest item of expenditure was $A499 million paid to telecommunications authorities in other countries.

The Chief Commissioner of OTC, Alan Coates, said the record results were an excellent preparation for OTC's impending conversion from a statutory authority to a government-owned company.

"OTC welcomes the structural changes made to the Australian communications industry announced by Senator Evans in May and accepts full accountability in providing services consistent with market demand," he said.

The annual report reveals that an internally developed fast packet switch and an integrated packet multiservice terminal have reached laboratory model stage.

The report also said the commission had managed to demonstrate an application of a new software technique for implementing the advanced CCITT signalling system No 7.



Figures are based on a survey of 100 users.
ISO=International Standards Organisation
SOURCE: IDC

A recent US survey indicates that while organisations demand centralised network management, a high percentage are pursuing their own developments (p9)

One-line fax-telephone switch on sale soon

HONG KONG — Expatriate Australian David Hartley is poised to begin marketing in Australia the Phaxswitch which allows a facsimile machine and telephone to be operated from the one line. Developed by Banksia Information Technology (BIT), which Hartley set up here three years ago, the Phaxswitch has won this year's Hong Kong New Product Award following a similar success last year with a printer enhancement product.

Hartley said Phaxswitch was coming to market when facsimile machine prices were tumbling and becoming consumer items. The product would cater for the greater penetration of these machines into homes and small businesses by removing the need for an extra line to be installed.

Hartley said he did not expect any trouble in receiving Telecom Australia's approval for connecting the Phaxswitch to the network. This approval would be sought early this month and with the accompanying appointment of a distributor, the first shipment could be made in October/November. Price was yet to be determined but could fall within the $A200 to $A300 range.

BIT was revving up to produce some 20,000 Phaxswitches a month by early next year, Hartley saying that he expected to have distributors in some 40 countries by that time.

In operation, when calls are made from an automatic facsimile machine, the Phaxswitch detects the fax calling tone and switches the message through to the receiving fax.

Hartley said BIT expected to rack up revenues of $HK100 million this year.

***David Hartley** . . . expects no trouble*

Bank to expand Starnet links

SYDNEY — The Commonwealth Bank is to expand its Aussat-provided Starnet private data communications network to cover 14 of its branches throughout Australia with the prospect of up to 100 branches being connected during the next two years.

The network expansion comes after the bank conducted a 12-month pilot study involving three Sydney branches and more recently, Darwin.

Chief general manager (retail) of the bank, Len Spencer, said the service during the pilot period proved to be thoroughly reliable, particularly important for branches not on major telecommunications routes.

Conference move raises fears of 'straitjacket'

By Noel Bennett and
Computerworld New Zealand

SYDNEY — Australia is hosting a conference in Melbourne in November which is causing misgivings as to whether the clock will be turned back on deregulatory moves that are now proceeding in many Western countries.

The conference, World Administrative Telephone and Telegraph Conference (WATTC), will consider an 11-page document which includes clauses that could introduce global laws governing telecommunications and inhibiting moves towards deregulation.

According to Australian sources — the Department of Transport and Communications had not responded to enquiries by press time — the International Telecommunications Union called together interested parties last March to try to adopt a set of ameliorative recommendations.

However, it is not clear whether these recommendations have been accepted.

If a clash does eventuate it apparently will be between those Western countries which are following the deregulatory route, Eastern block nations which favor regulation and Third World countries which, while uncertain, have a fear that highly advanced nations will move in to take over their telecommunications.

Straitjacket

The Telecommunications Users' Association of New Zealand (TUANZ) has said that the direction being followed by WATTC would put international telecommunications in a legal straitjacket that would last well into next century.

A spokesman for TUANZ said increased regulation, or even worse, re-regulation, was the last thing New Zealand needed if it were to manage its new telecommunications environment.

One vague reference in the regulations suggested that even users of private data networks, which included international links rented from Telecom New Zealand or any other supplier, would be bound by the regulations.

The second contentious point concerned the services that should be regulated and according to the spokesman, the regulations would seem to cover not only conventional services such as telephone and telex but also value added services.

Since the results of WATTC must be a consensus, it would seem that the conference might well end up with no decisions being ratified, he said.

NEWS

DEC assuming the crown of connectivity

SYDNEY — DEC is rapidly moving to become king of connectivity as well as king of the minicomputer following its major release of products for connecting local- and wide-area networks and giving access to the IBM SNA environment.

Announcing the products, managing director of DEC Australia, Frank Wroe, said: "As companies grow and networks become increasingly complex, DEC can provide users with unrivalled systems compatibility and network integration across an entire enterprise-network environment."

To the world of IBM users, DEC has introduced the Decnet/SNA Gateway-CT (Channel Transport) and the Decnet/SNA Gateway-ST (Synchronous Transport). said to provide SNA users with a network-to-network interface to DEC's wide range of applications.

Using either gateway, users can simultaneously perform large quantity processing functions such as terminal emulation, file transfer. mail and document exchange, as well as implementing distributed application programs which run between DEC and SNA systems.

The Decnet/SNA Gateway-CT supports 255 concurrent sessions and makes use of the DEC ChannelServer hardware, providing users with a direct connection from an IBM 370 channel environment to an Ethernet environment.

The Decnet/SNA Gateway-ST, which makes use of the DEC MicroServer hardware, is said to be a midrange transport solution which provides improved performance and can support up to 128 concurrent sessions.

DEC has also enhanced its VMS/SNA software, providing users that require a single. low-speed SNA link with many of the same functions as the Decnet/SNA Gateway. A systems to network interface. VMS/SNA software allows users on any size Vax system to move information and files between remote departments of office and an SNA environment.

For links between local-area and wide-area networks, DEC has introduced its MicroServer, said to be a high-performance Ethernet communications server giving users a cost-effective, higher-speed connection for synchronous wide area applications and providing the hardware foundation for existing and future generations of synchronous communications servers.

The MicroServer is said to make the speed of DEC's server family up to four times faster than its present Ethernet communications servers.

Satellite organisation monopoly questioned by Aussat leader

By Noel Bennett

SYDNEY — It is not only the internal telecommunications monopolies worldwide that are being attacked, but also those operating internationally.

Speaking at a recent symposium, managing director of Aussat, Graham Gosewinckel, said he believed the monopoly of Telecom and OTC had been essential to the orderly development of the basic telecommunications networks for Australia. However, it was now time for change.

Similarly, the virtual monopoly ascribed to Intelsat, the international satellite organisation of which Australia was a foundation member, had been essential for establishing the global communications network.

"But does that monopoly make the same sense 25 years later," Gosewinckel asked.

Government action

The seminar, New Directions for Telecommunications in Australia, was organised by the Australian Information Technology Council.

Michael Hutchinson, first assistant secretary, telecommunications policy division, Department of Transport and Communications, said that if any organisation as large as Telecom had to change direction then time was necessary and the process would not be trouble-free.

Until Austel, the new body to oversee the activities of carriers was established, the Trade Practices Commission could fulfil that role.

However, if the TPC was unable to ensure these conditions prevailed, the "government would step in".

Chairman of Atug, Tony Staley, said while the growth area of value added services was open to competition, industry believed the list of services still reserved for Telecom was painfully long.

Likewise, industry wanted the right to re-sell spare capacity on private networks.

As a precursor of the steps now being taken by Telecom, the managing director of Telecom, Mel Ward, said: "Telecom would be working with its industry partners in new and changing ways, through joint ventures and other alliances."

OTC, through managing director, George Maltby, believed that Austel should not be overly legalistic and must be aware of the marketplace demand on the carriers.

The Federal secretary of the Atea/Atpoa, Mick Musumechi, said the new financial burdens on Telecom could well prove to be more damaging to Telecom than deregulation.

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NEWS

briefs

'Substantial savings'

MELBOURNE — The State Taxation Office of Victoria is combining BSP multiplexers from Scitec Communication Systems with the Telecom Megaband Service to achieve "substantial cost savings" in the near term.

These savings were in comparison with the costs associated with expanding the present Telecom Datel services which have a high recurrent rental cost. The Megaband service is supplied through Vistel, the Victorian government's networking arrangements with Telecom. According to the Taxation Office, the Scitec/Megaband solution would also be the most flexible in configuration and was readily expandable to satisfy future requirements.

Do-it-yourself PIN

MELBOURNE — Datacraft Australia has won a contract to supply the Commonwealth Bank with a system to allow customers to select or change their own Personal Identification Number at their own bank branch. The PIN may be either a combination of numbers or letters and the new additional customer service will begin next year when the bank instals the Atalla Card Activation and PIN Selection (Caps) system at branches.

Connectivity theme

SYDNEY — Connectivity will be a major theme of briefings held in conjunction with the Australian Computer Exhibition being staged at Darling Harbor, Sydney, from September 20 to 22.

Six presentations on "OSI — Its Meaning and Significance" will be delivered by John Seager of the National Protocol Support Centre as a spearhead to the connectivity theme.

Briefings to help visitors to understand practical use of new technology include Satellite Communications for Small and Medium-sized Businesses, Modem Standards — What do They all Mean? and What is ISDN? — What Does it Mean to Users? Other briefings will also be held on desktop publishing, presentation graphics and PC Lans.

Standard platform hope

MENLO PARK, California — Beta testers of the Connection Co-processor board and the Communication Applications Specification (CAS) believe the products might become a standard platform for personal computer communications.

Intel Corp and Digital Communications Associates announced in mid-August that CAS was an API intended to enable seamless background communication of data between compliant Dos or OS/2 applications. At the same time, Intel PCEO introduced the first hardware product, the Connection Co-processor, to support the CAS specification.

Private VAS network

COLOGNE — The expected deregulation of West Germany's value-added services (VAS) market has inspired plans by four insurance companies to set up and operate their own joint network. The so-called Vene project symbolises growing interest in the VAS market among endusers in West Germany.

Telecom deals could crush competitors, says opposition

By Noel Bennett

MELBOURNE — Telecom would appear to be "astriding the world like a Colussus" following deals recently completed with Hewlett-Packard and Fujitsu and with the distinct possibility that its locomotive speed in forming alliances will continue.

The new arrangements have brought a spirited response from the Shadow Minister for Communications, Senator Tony Messner.

In one month, Telecom has:

- Purchased a 50 per cent stake in the computer operations of Hewlett-Packard Australia Ltd for $A12.5 million;
- Formed a joint venture company, Information Switching Technology Pty Ltd, in partnership with Fujitsu Australia Ltd. Telecom holds 60 per cent of the venture;
- Also formed a joint venture company, Advanced Network Management Pty Ltd, with the UK-based company, Systems Reliability. Telecom again has 60 per cent of this venture.

These agreements come on top of the deal (*Communications World,* Aug, p1), in which Exicom bought AWA Ltd's telecommunications manufacturing businesses. Exicom itself has a joint venture with Telecom, Telecom Technologies, to develop new products based on Exicom's telephone systems technology.

Urgent action

Telecom's partnership deals with Fujitsu and Systems Reliability had "the potential to crush existing and potential competitors in the telecommunications industry", Messner said.

Messner said one of the main reasons why the government decided to set up Austel was because the TPC did not have the expertise and the proper power to stop anti-competitive behaviour by Telecom.

"It is up to the government to take urgent action to ensure that Telecom is not given greater market power and an unfair commercial advantage as a result of its deals with private companies," Messner said.

The executive director of the Australian Telecommunications Users Group (Atug), Wally Rothwell, said (of the HP deal) that there did not appear to be anything sinister and that Telecom had assured Atug that it would not be entering into any joint ventures which would involve expenditures of more than $A25 million.

The deals had been approved by the Department of Transport and Communications, full details would be provided in Telecom's annual report and Telecom would not be changing any of its tendering policies.

The deputy executive director of the Australian Information Industries Association (AIIA), Tim Conway, said of the Hewlett-Packard deal that as the effective establishment of Austel, the independent regulator, was probably two years away, there was some potential for Telecom to secure market advantage in the interim.

Remarking that the same sentiments applied to the Fujitsu and Systems Reliability deals, Conway said the AIIA considered that the government should take immediate action to ensure that a more definite and pronounced separation be made between Telecom's reserved monopoly services and those which it operated commercially in competition with the private sector. Further, Telecom's present strategies could add fuel to the case for privatisation of Telecom's commercial arm, although the association had not previously entered the privatisation debate.

Accordingly, the government should act decisively in the interim period before the setting up of Austel to ensure that any acquisitions or joint ventures were separately accounted for, did not involve the potential for "tying" of monopoly services to the equipment sold in competitive markets or that equipment would be "bundled" with monopoly services.

There was no evidence that any abuse was taking place now, but three years down the track and it may be a "different matter", Conway said.

Commenting on the Fujitsu, Systems Reliability deals, Telecom's managing director, Mel Ward, said: "We are combining with advanced world companies to bring what will be 'state-of-the-art' products developed in Australia . . . we have the expertise and the ability."

In his remarks on the HP deal, Ward expressed similar sentiments saying: "This venture will create greater research capacity, export potential, dollars in the bank and opportunity for Australia."

Telecom's Mel Ward (left) and Fujitsu's George Ranucci

Fujitsu sees venture as strengthening its marketing presence

By Noel Bennett

SYDNEY — Fujitsu Australia sees the new deal with Telecom as strengthening its presence in the computing, communications and telecommunications markets.

The Fujitsu/Telecom partnership, Information Switching Technology Pty Ltd (IST), will be responsible for arranging the manufacture of PABX equipment through Fujitsu for supply to Telecom for marketing.

The new products will be marketed through Advanced Communications Systems under the ambit of the corporate customer division, recently formed within Telecom.

Commenting on the deal, the managing director of Fujitsu Australia Ltd, George Ranucci, said: "The joint venture agreement heralds a major market presence for Fujitsu telecommunications products in Australasia.

"For the first time, customers can be offered complete business systems, combining our traditional computer and communication solutions with telecommunications solutions from Information Switching Technology."

The products, to be manufactured at Fujitsu's new $A30 million Dandenong plant in Victoria, have been specifically developed to interface with Telecom's ISDN, in particular adopting Telecom's ISDN network signalling protocol, TeLinc, and to accommodate other requirements for the Australian market.

A spokesman said the top of Fujitsu's PABX range, the F9600, could accommodate up to 10,000 extensions while the smallest could handle up to 600 lines.

The spokesman also said the contract between Telecom and AWA, the prime supplier for the Commander system, came up for renewal next December.

It was expected that Fujitsu would take over its manufacture in an anticipated agreement with Exicom.

The general manager of Advanced Communication Systems, Rod Maddock, said Telecom paid $A1.9 million for its 60 per cent share in Information Switching Technology and had talks with other suppliers before entering the deal with Fujitsu.

'Vast expansion' seen for HP products

MELBOURNE — Both Telecom and Hewlett-Packard Australia view Telecom's purchase of a 50 per cent interest in the commercial computing operations of HP for $A12.5 million as being a "top deal".

Telecom said the investment represented a significant advance in its goal of offering customers total communications and computing solutions.

For HP, the link is said to open up the prospect for a vast expansion in market opportunities for its computing products, particularly with Australia's top 250 business customers.

Under the move, a range of HP's distributed computing products, personal computers, workstations and business applications will come together with Telecom's existing business products and computing solutions.

It is understood that Telecom account managers will work with HP sales people in proposing computer/communications solutions to the target audience although HP people will not become involved in the telecommunications side.

OTC buys $US3m share in US company

SYDNEY — Taking further advantage of the deregulated climate, OTC is adding one more value-added service to its present repertoire with an investment in a US database systems company.

OTC International Ltd, set up to pursue business opportunities overseas, has purchased a 21 per cent share of Telebase Systems Inc for $US3 million in an industry and market which is expected to be generating annual revenues of $US5 billion by 1991.

The Telebase product, to be marketed in Australia under the product name IntelNet, will allow easy access to several hundred databases around the world.

Expected to be available in October next, IntelNet will appeal to regular users of information such as libraries, universities and the media and as well as business management, OTCI says.

One of the claimed advantages of IntelNet was that 800 databases could be accessed by the one language.

Marketing in Australia will be coordinated by OTC Enhanced Services.

Value-added range

MELBOURNE — The new company formed by Telecom and British-based Systems Reliability, Advanced Network Management Pty Ltd, will provide a range of value-added products to enhance Telecom's new PABX offerings.

The products will be marketed by Telecom's Advanced Communication Systems and include telephone information monitoring systems (Tims), systems for network management and other developments such as electronic directories and messaging systems.

Telecom has 60 per cent of the new enterprise and most of the products will come on stream progressively from early 1989.

NEWS

PC Lans set to outpace terminal networks

SYDNEY — IDC Australia expects that the rate of PC Lan implementation will eventually outpace that of terminal/systems networks in the 1990s.

Besides the increasing number of PCs, other factors driving this growth include:

- The ability of networked PCs to share devices and services;
- The removal of fears with the emergence of standards such as Ethernet (IEEE 802.3) and Token Ring (802.5);
- Server technology being improved in power and function with new capabilities allowing PCs to access external or corporate resources on other computer systems;
- The increasing number of hardware and software products which offer convenient handshaking between PCs and multi-user operation systems;
- The ability of PC Lans to support existing Dos applications and interfaces;
- PC Lans allowing the cohabitation of equipment and software from multiple vendors;
- PC Lans being cheap enough to attract small organisations and departments.

These observations are made by IDC in its newly-released research report, *Australian Local Area Network Market*, which also incidentally remarks that with the growing acceptance of Unix by the business community, this operating system may eventually become the one of choice for the implementation of OSI-based communications.

The 72-page report provides a comprehensive analysis of the way the market is moving and how the various vendors are faring. However, it is also of value to users, as it details findings from a survey of companies with annual turnovers of more than $A400 million.

For example, while most respondents consider OSI support to be either important or critical to their organisations, most are adhering to proprietary network architectures.

Also, centralised network management is becoming a more important issue as is systems integration and connectivity within a multivendor environment, the report says.

Voice and data integration appears to be a sleeper at present, but users will pay more heed to this technique in the near future, a finding in line with the coming commercial availability of ISDN. And perhaps drawing on their experience with computers, respondents are definitely seeking service and support from vendors.

With this drive towards OSI, it is pertinent that the report says the process of defining networking protocols is still continuing and it will take some time for the standards that do emerge to "harden" and be widely implemented by vendors. The report notes that the problems arise with higher level protocols that define network functions, distributed database access, micro-to-mainframe communications and network management.

The report sees the predicament for vendors as being:

"The ISO is still working on these (higher level protocols), leaving vendors with a dilemma: if they commit too quickly to an emerging standard, they can end up wasting a lot of time and funds linking products that eventually fall by the wayside; but if they hold off implementing a potential standard till it is better defined, they run the risk of falling behind competitors in the race to provide multivendor connectivity."

In illustration, the report says that TCP/IP has become, by default, a de facto standard for a growing number of companies. But despite its strong market position, IDC expects TCP/IP to be only an interim standard until OSI is in place and that there will be a divestiture from the TCP/IP protocol suite within vendor product lines and user networks by the end of the decade.

Within the vendor community, the report says that the profitability of many of the smaller independent Lan vendors is being threatened by large systems manufacturers such as IBM and DEC.

Accordingly, these independent suppliers will continue to forge links with systems manufacturers seeking OEM and joint marketing relationships.

Simultaneously, they will concentrate on niche markets and attempt to distinguish their products through greater communications flexibility, enhanced software functionality, price and network design and implementation support.

The report's 10 chapters are supported by more than 30 tables and pie charts.

● ***Australian Local Area Network Market.*** **From IDC Australia, 56 Berry St, North Sydney NSW 2060. Tel: (02) 922 5300.**

Melbourne base chosen for Austel

MELBOURNE — The Federal government has decided to locate Austel, the independent body to be established to regulate the telecommunications industry, in Melbourne.

The Minister for Transport and Communications, Senator Gareth Evans, said the city was the most appropriate venue given that the primary focus of Austel would be monitoring the activities of Telecom and that about half of Australia's telecommunications manufacturing industry was in Victoria.

Work was now being done to implement the government's reform package, including:

- Development of definitions of community service obligations to allow Telecom to identify associated costs properly;
- Setting a price-cap formula to guarantee consumers received real cuts in basic telecommunications costs;
- Discussions between Telecom and the industry in the lead-up to the opening up of PABX maintenance in full competition as from January 1 next;
- Preparation for the implementation of the industry development arrangements to encourage exports further.

Under the government's reform package, Telecom would continue as a statutory body, but would receive a new enabling Act.

Accordingly, Telecom would be more oriented towards the new less regulated environment, containing reduced direct government controls and increased accountability.

Telecom's corporate chief speaks out on business alliances

By Noel Bennett

MELBOURNE — Telecom was pursuing many other business opportunities and the "natural" limits to alliances or joint ventures would be dictated by what made sense, said its director of corporate strategies, Dr Terry Cutler.

Strategic alliances were the most efficient way of business development in an era marked by the convergence of computers and communications, he said.

This not only applied to Telecom, but also to private companies. Cutler also said Telecom was aware of its responsibilities under the Trade Practices Act and had begun to consult the Trade Practices Commission regularly to ensure that body was aware of Telecom's movements in the market.

The Department of Transport and Communications had also been advised of Telecom's intentions and none of the deals formally entered into since May 25 had been done without the explicit approval of the minister.

Cutler was speaking in the context of the links forged with Hewlett-Packard and Fujitsu during the last month and an impending possible deal involving Moneywatch, an online financial information service, owned by John Fairfax.

Terry Cutler . . . "most efficient way of business development"

On the Hewlett-Packard deal, Cutler said Telecom had called for expressions of interest more than two years ago. The company was chosen as there was every sign that the "cultures" of the two parties were complementary and that both could work effectively together.

Similar arrangements were being conducted by other parties worldwide. However, the success rate had not been that good, due to differing backgrounds and cultures.

Besides similar cultures, any companies wanting to work together also had to take account of their respective product ranges and future development strategies.

Cutler said that the link forged with Fujitsu was a different matter. The key factor here was one of product collaboration to create the right product for the increasingly competitive PABX market. The link was far more like a joint venture than was the Hewlett-Packard deal.

On the forthcoming deregulated customer premises equipment market including small business systems, Cutler said Telecom had three options: move out of the market, enter into its own manufacturing or form a joint venture in which Telecom could contribute its own research and development and so have some "intellectual property" in the resulting product.

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ERICSSON

OPINION

PC AND TERMINAL-TO-HOST LANS, GATEWAYS, MICRO PRODUCTS

[redacted]

Telecom — an uncaged tiger?

COMPUTICATIONS, a new word to learn, but one that will be increasingly part of the vocabulary as computers and communications coalesce into one indivisible entity.

In its usual prescient way, IBM Corp saw many years ago the coming of this new era, taking a shareholding in a US satellite communications company and marketing its own PABX in Europe.

Closer to home, those who can foresee fully now the makeup of the Australian telecommunications market in the near future will be very prescient indeed.

Initial reactions to Telecom's moves, its links with Fujitsu, Hewlett-Packard and Systems Reliability, besides those which may be pending, suggest that a tiger out of the cage is far different from one behind bars.

Reflections made as to Telecom's 90-year history, its technical expertise, its familiarity with the corridors of power, international business links and that it is populated at the top by staff who welcome the challenge of operating in a free environment may have warned the wise that immense changes would come about, and quickly, in this "deregulated" world.

At this stage, perhaps the wise can only hope that the new tiger will not be on an uncontrolled rampage and will not inhibit the development of telecommunications; but that it knows what are the true interests of Australia overall and that it will use its new strengths accordingly and not just for self-interest and aggrandisement.

The big question: will OSI products replace TCP/IP?

By Mei Li Tan

IN recent times, computer and communications vendors are realising that proprietary architecture, operating systems and networking environments have little real growth potential. The market is demanding greater compatibility and portability between systems and looking to implement industry standards. Vendors are back in the labs working on standards-compliant products and getting them ready for market. At the same time, MIS managers are at the drawing boards planning future implementation of standards-based networks.

Two significant multivendor protocol standards are contending for the corporate networking dollars today: Transmission Control Protocol/Interlink Protocol (TCP/IP) and Open Systems Interconnect (OSI). The big question is: how soon will OSI-compliant products begin to flow to the marketplace, and will this developing set of networking protocol standards eventually replace TCP/IP?

The general consensus favors the acceptance of OSI as the protocol standard of choice over the long term. While TCP/IP has been gaining popularity over the last few years and will continue to service its users for some time, OSI will be the force behind TCP/IP's eventual demise.

The greatest initial push towards OSI will come from the US government which has mandated, through its government OSI program (Gosip), that all new federal systems will use OSI within the next two years. Indeed, the US Department of Defence, which originally established the TCP/IP protocol suite as a de facto standard, will be spearheading the development of strategies for migration to OSI. Together with the US National Bureau of Standards (NBS), a seven-layer TCP/IP-to-OSI gateway has been developed.

The reasons for migrating from TCP/IP to OSI are quite straightforward. OSI applications are by far richer and will offer greater functionality. Moreover, the lower layers will be more reliable and easier to customise to suit a particular user's internetworking requirements.

An often cited example which highlights OSI's superior offering is the file transfer application. The TCP/IP file transfer protocol (FTP) is limited to bulk file transfer, while the OSI equivalent, File Transfer, Access and Management (Ftam), is much more advanced and will allow users to access portions of files as opposed to being locked into whole file access. Other enhanced services OSI provides include x.400 mail which is a much richer mail application that will also offer x.500 directory services in the future; and stronger network management and security offerings.

As OSI continues to grow, developers of TCP/IP have conceded to the new standard and will no longer be adding functionalities to TCP/IP. Recent activity in the major overseeing body for choice for TCP/IP in the US indicates that the network management system of choice for these networks will be based on the developing OSI network management specifications. This is significant as it will allow for a much smoother transition from TCP/IP to OSI in the future, speeding up the process of implementing OSI.

Despite its richness and almost endless potential, OSI today is a picture that is far from complete. Nevertheless, this will not keep organisations from starting to implement OSI-based networks from which they can slowly build as standards firm and products come to market.

A brighter future

As the balance of power shifts from TCP/IP and other proprietary networking standards to OSI, migration will become a significant issue. Users often cannot afford to discard existing systems in order to accommodate OSI and gateways are being developed to link OSI-based networks with existing TCP/IP-based networks. In the case of proprietary networks, many will eventually disappear while others — most significantly IBM's SNA — will more likely coexist with OSI.

Users have been clamoring for multivendor connectivity solutions for some time. TCP/IP is an existing set of protocols that can now do (to varying extents) what OSI promises in the future, but while it can generally take care of users' needs today, users are looking for more than a "today" solution. The power and flexibility of the OSI architecture makes it an ideal tool for integrating the computing environments of large organisations.

A powerful argument can be made for moving away from TCP/IP and pushing forward with OSI. Although TCP/IP networks are widely implemented and outnumber OSI networks today, those involved in the planning, designing, developing and implementing networks of the future would be well advised to prepare themselves for the brighter (longer-term success) and better (more functional) future with OSI.

● *Mei Li Tan is program manager — communications, IDC Australia Pty Ltd.*

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IDG COMMUNICATIONS

OPINION

When you walk the networking trail, take a ferret with you

By Elisabeth Horwitt

FRAMINGHAM, Mass — Those who follow the networking trail are accustomed to encountering unfounded or even downright ludicrous rumors from time to time. That is why we try to get more than one source to substantiate gossip before we print it. But how do you ferret out the facts from a group of sources who flatly contradict each other?

That was the problem I had while digging up the latest dirt on IBM's future Netview/PC strategy. Here is what I heard:

Either IBM is planning to abandon Netview/PC, or it will turn distribution and support of the product over to another vendor (as it did with the IBM Cabling System). However, IBM is also about to release an OS/2 Extended Edition version of the offering.

The first two statements are rumors; the last statement is confirmed by a number of independent sources and cautiously reinforced by IBM.

Despite its avowed desire to let users control third-party networking devices through Netview, IBM has been unconscionably slow to release the code that vendors need to develop such applications, third-party sources say.

Alerts and alarms

The problem is that IBM has not yet come up with a set of generic commands that Netview would use to initiate processes such as line and device testing, taking devices offline, reconfiguring bandwidth and the like, according to Steven Mank, director of marketing at Codex. That is supposedly why many vendors have limited their Netview/PC support to one-way communication, sending alerts and alarms up to the host but not bringing host commands back down to their network management devices.

Nonsense, says Frank Dzubeck, president of Communications Network Architects. Netview will pass through commands as Ascii character strings so that a console operator on a Netview host can process such strings. The reason so few vendors have developed this type of application, Dzubeck says, is that they do not want their devices controlled by IBM, and they want to sell their own network management systems.

Another third-party complaint: Atul Kapoor, president of network management company Kaptronix, says that while IBM's Netview/PC people have been very responsive to his needs, he cannot get the Netview side of the house to answer his questions about how to access the host-based system directly.

"Since most third-party vendors do not have access to a Netview host, it is hard to test the host side of their applications," he complains. IBM just does not want other vendors to directly access Netview, he says.

Nonsense again according to Dzubeck. IBM has expressed its willingness to have vendors bypass Netview/PC and provides the specs for doing so.

My own opinion is that, yes, IBM has been slow to introduce generic Netview commands for governing third-party networking devices, but the delay could be due to honest causes such as the need for such commands to comply with Systems Application Architecture elements.

The one consistent piece of hearsay I caught was that user demand for third-party links to Netview/PC has been close to zilch.

● *Elisabeth Horwitt is a writer with* Computerworld, *a US sister publication.*

Standard references abused: win-win becomes lose-lose

By Patricia Keefe

FRAMINGHAM, Mass — The recent furore surrounding the efforts of one networking vendor to bend its participation in the standards process into a marketing tool has turned a spotlight on use and misuse of standards development.

The topic is hardly new. What is startling is the willingness of the venerable and ordinarily conservative Institute of Electrical and Electronics Engineers (IEEE) to go public with its frustrations.

Last month, the IEEE Standards Office filed a protest with the US Securities and Exchange Commission challenging the accuracy of some statements in the prospectus of Synoptics Communications. The IEEE took issue with statements that strongly implied the standard for running high-speed Ethernet over telephone wire was based on technology developed by Synoptics.

Also angered by what network consultant David Terrie once characterised as an effort to "take singular advantage of a group victory," two competitors filed similar complaints.

Whatever motives you assign to Synoptics' competitors, the point is that the IEEE felt compelled to put its foot down — not down on Synoptics per se, because, as noted by Don Loughry, chairman of the IEEE's 802.3 Capital Working Group, many companies habitually invoke standards in their data sheets and sales pitches.

He said vendors were increasingly abusing references to standards activity in ways that were becoming significant.

But what is the IEEE really upset about? Just the dilution and weakening of the standards process.

"You try when you write a standard to be as open, constructive and positive as possible. It is a win-win (situation) for all; everyone gives up a little in order to create an open and trusting environment," Loughry said.

So it is understandable that participants in the exercise, who spend fortunes adhering to the new standard, pale at the thought that users might view those efforts as less than trustworthy.

And how could that happen? Very easily. Take a look at the Open Systems Interconnect (OSI) seven-layer connectivity model. The OSI banner has long been waved as the answer to closed network systems. Naturally, communications suppliers have embraced OSI with fervor. Hardly a press release goes by without dangling the teaser "OSI-compatible."

But what does that really mean? Some vendors truly can demonsrate compatibility with the standard as now drafted, and are careful to note that they will migrate their product to the final product specifications. Others wave the OSI flag with great ardor, but when questioned closely, appear to be talking about future plans to migrate to OSI.

The problem is that some users do not ask those questions. Imagine a user who has shelled out a substantial sum of money for a network he or she believes to be OSI-compatible.

If it turns out that significant revisions are required to make this network commune with the final OSI specifications, not only is that user in for a nasty shock, but groups like the IEEE fear the standards process will become a scapegoat.

To protect its hard work, the IEEE wants to make sure its standards are not represented as being something they are not. So it is taking its gloves off. "There is a feeling among a number of us that we just have to say, 'Whoa, this can't go on.' " Loughry said.

While the IEEE's vigilance undoubtedly will bear fruit, users still have to take responsibility for protecting themselves, to cut through the marketing flash and get the facts.

If you are going to put buzzwords in requests for proposals, make sure you understand what you are talking about. Otherwise, you could end up buying everything but the kitchen sink and miss the standard you were looking for.

PC versus mainframe: it's war!

By Douglas Barney

FRAMINGHAM, Mass — It is not as bloody as fights between gangs in Los Angeles, but when it comes down to downsizing, turf-protecting mainframe managers regularly butt heads with upstart PC bigots.

In fact, the political challenges of moving host applications to personal computers often exceed technical obstacles, according to users who have made the switch.

Downsizing is a relatively new buzzword than means moving applications from larger host computers to PCs. While successful downsizing can bring added flexibility and enormous cost savings, it can just as often bring controversy and turmoil.

"It is turf. We are examining an alternative to something they (managers of large systems) very strongly believe in," said George Hannye, an internal consultant for business analysis at Eastman Kodak Co, who has downsized some of his company's manufacturing operations.

Some of those in MIS who advocate downsizing criticise the mainframe orientation of their more traditional peers. "There is a tremendous problem in mindset. These people tend to get paid for staff size and budget," said Dick Hock, MIS director at Echlin Inc, which has successfully downsized its corporate headquarters.

In fact, the Echlin downsizing project hit some rough spots due to the radical approach. "We had a high turnover rate. People did not believe in what we were doing and did not want to work with micros," Hock said.

Ruffled feathers and the loss of some staff members has apparently been worth it. Now, instead of an IBM 4381, Echlin headquarters uses 25 PCs and a local-area network, saving more than $US340,000 a year.

Sometimes the battles get a bit nasty. One user in a Fortune 500 company, who asked not to be identified, ran into tremendous resistance from upper-level MIS. "The people that ran the mainframe had a lot of political clout. They stonewalled us and ran some red herrings in front of us," the user said.

With support from upper management and perseverance, the company now has several micro-based manufacturing systems.

Downsizing is very hot now and will get hotter as more robust PC operating systems, Lans and storage devices gather steam. "As Unix becomes more of a de facto standard, it could play a major role in downsizing," predicted analyst Marty Gruhn of The Sierra Group. Users like Hock said they see a similar potential with OS/2.

And according to some, if you want to move up in MIS, you have got to get down.

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DEMAND FOR EFFICIENCY — THE TREND FOR TECHNOLOGY

Future trends in technology will see more customer-driven advances and greater encouragement for the entrepreneur in the marketplace, according to Mr Geoff Reynolds, Marketing Manager of NEC Australia Pty Ltd.

"Business users are already seeking higher featured integrated telephones and data terminals which in turn require high data speeds and access to larger data banks.

"Also with an increasingly mobile business personnel, there is a need to improve communication for these people by utilising cellular telephone systems and satellite links to trains and planes," said Mr Reynolds.

"The primary motivation for businesses will be to improve efficiency and to reduce costs and such a climate provides numerous opportunities for entrepreneurs."

Australian businesses have been quick to adopt new and innovative technology — from the installation of pioneer telegraph systems to telex and the rapidly growing facsimile networks.

Today's business is moving towards high productivity by improved efficiency, control and cost allocation across its private networks, says Mr Reynolds.

NEC Australia is well placed to implement new and innovative systems in the future.

"The advent of networking third generation PABX's connected by two megabit data links introduced a host of cost effective, efficient communications features and facilities including network feature transparency, centralised operators, common numbering schemes, data transfer, cost saving on data modems by pooling and voice mail to mention a few," said Mr Reynolds.

"Being manufacturers of components, computers and communication equipment, NEC Australia is uniquely positioned to provide all aspects for the future demands of business and its drive for greater efficiency.

"As we progress into the '90s NEC's technology will be at the forefront in Australia," said Mr Reynolds.

NEC

NEWS

Cheaper Ethernet connections from Intel

IDG News Service

FOLSAM, California – In a move that could result in Ethernet connections for less than $100, Intel has announced two Ethernet Lan controller families.

The eight-bit 82590 and 16-bit 82595 chip sets, available in surface-mount and through-hole versions, are so small that vendors could provide a PC Lan connection on the motherboard rather than requiring a separate card.

Home Gee, marketing manager for Intel's data communications focus group, said a complete Lan interface could be installed on a motherboard in less than five square inches.

The chip sets could be installed in PCs, diskless workstations, laptops, or on multi-function cards.

The chips are capable of supporting a number of hardware links, including thick Ethernet, thin Ethernet or Cheapernet, unshielded twisted-pair Ethernet, Starlan, and fibre-optic cabling, according to Gee.

Depending on the type of link, the extra space required ranges from about one square inch to about 4in by 3in.

Both controllers could support Ethernets running as fast as 20M-bit/sec, Gee said. Standard Ethernet transmission rates are 10M-bit/sec. The chips use the PC's processor and memory, which further lowers the cost.

Voice mail bureau skips the time zones to New Zealand

SYDNEY — Connect International, after establishing a voice mail bureau linking Sydney and Melbourne, plans to go across the Tasman to New Zealand.

The company has also introduced a software package allowing exchange of information by access to a computer rather than through an operator.

A spokesman said the Aspen voice mail equipment being used in the Sydney-Melbourne network trials was able to provide time windows for transmission of non time-critical calls, allowing messages to be transmitted overnight at the cheapest STD rates.

On the international aspect, the spokesman said staff travelling interstate or internationally were easily contacted and time zone differences were no longer of concern.

Connect Transaction Processing is hosted on an IBM PC/AT or compatible. The package is integrated with the mainframe.

Using a tone-dialling telephone, callers are guided by a pre-recorded human voice.

Benefits claimed are:

- Reduction of operator staff and the shorter transaction times means lower communications costs;
- Easier and more convenient access by using a telephone and easy to use.

Transaction Processing is said to have applications in credit card verification, an information service for accessing the status of accounts, determining the applicable interest rates and other information.

Datacraft links with Black Box in mail order venture

MELBOURNE — Datacraft Ltd and the Black Box Corporation of Pittsburgh, have committed to a long term business relationship through the formation of a joint venture company to be known as Black Box Catalogue Australia Pty Ltd.

Since 1981, Datacraft has distributed the Black Box Catalogue through its direct marketing division and has built the operation to be one of the most successful of its type in the world. The manager of the division, David Anderson, has been appointed managing director of the new joint venture company which is an equal partnership between Datacraft and Black Box Corporation.

The chairman of Datacraft, George Kepper, said that the commitment by Black Box Corporation to invest and develop further in Australia, would be a benefit to Australian customers and the industry as a whole.

Open Access takes advantage of 0055

By Noel Bennett

PERTH — A West Australian company has moved smartly to take advantage of the new Telecom 0055 information service by providing systems to help with information selection by callers. Open Access Pty Ltd offers InfoTalk with accompanying InfoDial and InfoServer, designed and made in Australia.

When telephoning the selected service, InfoDial allows the caller to be offered a number of additional services verbally by activating the telephone dial pad.

The information services may be delivered from pre-recorded voice data or from a computer as printed data which will then be "spoken" by the InfoTalk hardware without any human intervention or interaction.

Open Access said 0055 service suppliers will need to interconnect many different computers and pre-recorded services to hundreds of telephone lines.

Open Access said InfoServer, a local-area data distribution device, does this by feeding sought information to the InfoTalk units to speak. This device also has connection protocols for SNA, HDLC and common asynchronous protocols for external computer connections.

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DATA COMMUNICATIONS

PRODUCTS, SERVICES, STANDARDS, NETWORK MANAGEMENT

Net users choose inhouse management, not vendor solutions

IDG News Service

FRAMINGHAM, Mass — Communications managers are taking network management into their own hands. When asked to describe their organisations' strategic network management direction in a recent survey, the largest group of respondents, 26 per cent, said they would rely on internally developed systems, not vendor solutions.

The survey results are part of a new study, *User Perceptions of Network Management,* published by International Data Corp, a research and consulting company. More than 100 of the top 1000 US communications and MIS managers were surveyed for the study.

"The main conclusion of the study is that there is clearly a demand for centralised network management," said Kathryn Korostoff, a senior market analyst for IDC, and the author of the study. "But the scepticism among the top 1000 US users that this capability exists is reflected in the higher percentage who are pursuing inhouse development."

A little more than 20 per cent of the respondents said they would look to several different vendors for different net management products.

Fifteen per cent said they had definitely decided against any central net management capability, apparently relying instead on the limited management features which vendors typically provide with most products. About 12 per cent said they would choose IBM's NetView product, while about half that number said they would choose some other vendor's offering.

Just under 10 per cent are looking to regional phone company central office switch-based network management schemes. About the same number said they preferred systems based on Open Systems Interconnection standards, and only 5 per cent reported that they had not made a decision at all on a strategic direction.

The results reflect the current realities for top 1000 companies managers, Korostoff said. Networks were critical to the function of these organisations, she pointed out. If the companies could not buy what they needed from vendors, they would dig as deep as necessary to develop their own.

The network management problem is complicated by the fact that most companies have more than one network. The IDC survey found that 52 per cent of the respondents had one to three networks, while another 34 per cent had four to six.

A single company might have a modem control system, another network management system for T1 multiplexers and still another for monitoring computer resource activity, Korostoff's study revealed.

Despite this, 43 per cent of the respondents said multivendor network management was not important in their organisations. Sixteen per cent said it was critical, and 34 per cent rated it as important.

But when users turn to vendors for their net management capabilities, the most important issue is service and support, the study found. "They need to know that if they have a problem, there is someone they can get in touch with," Korostoff said.

"Users will have a network control centre on site, but they want to make sure the vendor can dial in and monitor the equipment for them."

Insurance

One example is Cambridge, Massachusetts-based Bolt Beranek and Newman, which runs what it calls a "shadow" network operating centre for customers who buy the company's net management product but want extra insurance, Korostoff said.

Somewhat surprisingly, in the light of the popular emphasis on centralised network management, only 24 per cent of the respondents rated this as critical, 47 per cent said it was important, and 28 per cent said it was not important. "Most users want a combination of centralised and decentralised management," Korostoff said.

The ideal structure for such users is a hierarchy of control, with local control of specific network components, regional control of a group of related networks and centralised control of key elements at the headquarters, she said.

Despite glowing vendor promises of the benefits of integrated voice/data network management, 71 per cent of the managers said such integration was not important to their organisations.

Intel-DCA move wins support

FRAMINGHAM, Mass — Support is growing for the recently announced Communications Applications Specification (CAS) from Digital Communications Associates and Intel.

Novell has endorsed the specification, suggesting it will ease development of gateways from its message-handling service to other messaging environments. Conetic Systems' Higgins To:Fax mail software will support Intel's connection co-processor, which is so far the only hardware that uses CAS.

Also Wordtech Systems said its database management and networking software would support CAS. Wordtech also announced development of a board that will plug directly into Intel's connection co-processor.

Under the CAS standard, PC application programs would be able to use a single set of protocols to communicate with mainframes, networks, facsimile machines or other PCs, Intel said.

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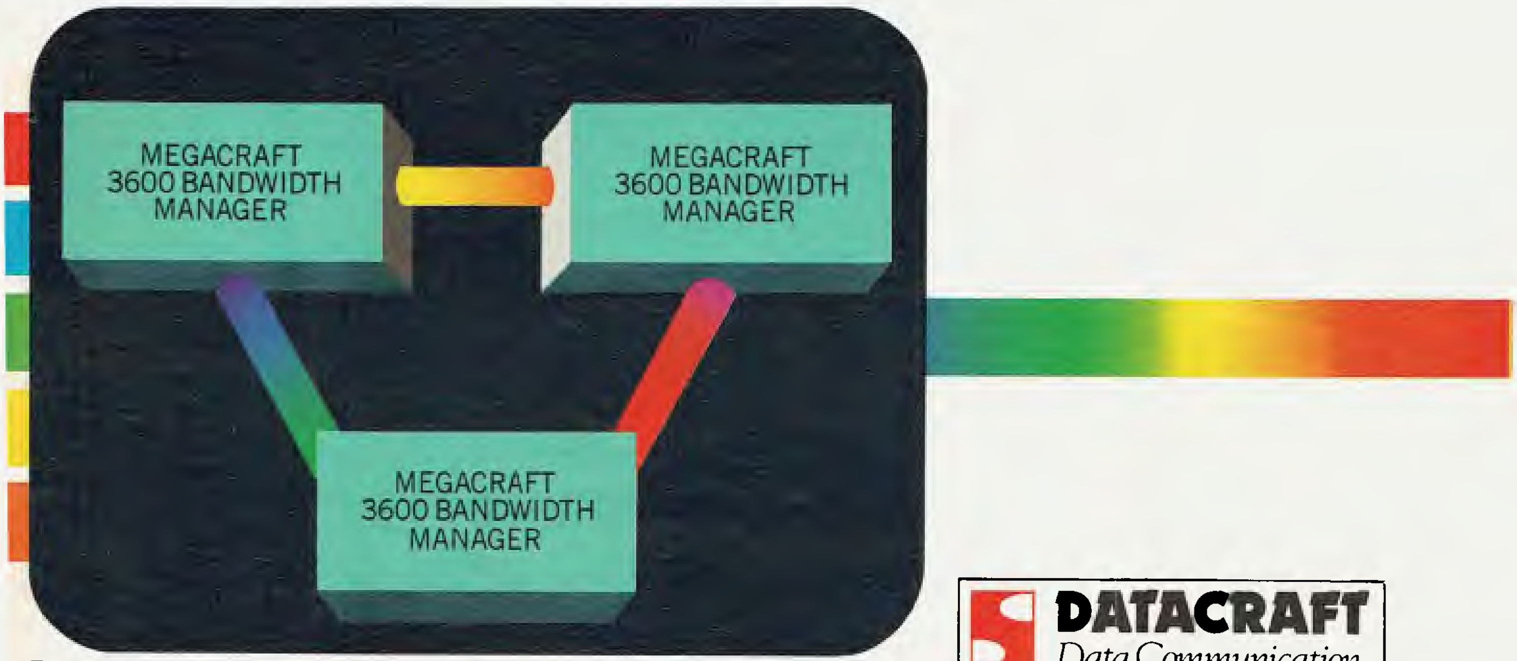
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DATA COMMUNICATIONS

Users to rally around multiple network management standard

By Laura DiDio

CAMBRIDGE, Mass— Customers increasing reliance on computers from multiple vendors — coupled with the need to manage a growing variety of networks, including local networks and voice nets — makes the idea of a single network management standard impractical.

Users will instead rally around multiple network management standards, according to industry analysts.

While analysts agreed that IBM's NetView will be the predominant network management tool used in Systems Network Architecture environments, it will not become the industry standard for heterogeneous local- and wide-area voice and data nets, according to a recent study by Forrester Research.

That opinion is shared by other industry analysts. "NetView hasn't lived up to expectations," claimed Jeremy Frank, program director for enterprise networking strategies at Gartner Group.

Forrester, a research and consulting company, concludes in its study that NetView lacks the flexibility to become an industry standard. The study was based on interviews with local network vendors, telecommunications equipment suppliers, long-distance carriers and Fortune 1000 users.

According to Forrester President George Colony, the study shows that although NetView/PC has attracted a "modest group of early supporters," it has failed to win over a majority of vendors, especially in the telecommunications equipment business.

"Users have a strong need to have one single network service point built into their communications systems, but NetView/PC isn't it," Colony contended.

In fact, the Forrester study predicts there will be not one, but five standards for network management by 1995. They include NetView for SNA; AT&T's Unified Network Management Architecture (UNMA) for large voice networks; DEC's forthcoming but as yet unannounced Decmanage for DEC networks; and OSI for network management.

The fifth option in the network management market will consist of all of the other smaller vendors' proprietary solutions. Forrester placed Timeplex TimeView and Cincom Systems Net/Master, among others, in this last category.

The Forrester report shows that NetView will dominate in SNA environments: 85 per cent of the Fortune 1000 users surveyed have SNA installed on their local nets, and of that number, about 60 per cent have NetView.

"Vendors are incorrectly perceiving that they can create a comprehensive net management facility that can encompass everything when, in fact, net management facilities will continue to be segmented," Colony said.

"There is a clear requirement for one single comprehensive network management facility, but it is an unachievable goal," Colony asserted. Large users, he said, will have "three or four different network management focal points, or workstations, because users have a multiplicity of networks in their businesses and, therefore, have to employ multiple net management facilities."

What this means is that the field is open for other vendors, such as AT&T, to provide users with network management alternatives. And those vendors are already signalling their intentions to enter the arena.

Recently, AT&T and Cincom formed an alliance to bring Cincom's Net/Master under the umbrella of AT&T's Unma.

The newly formed partnership between AT&T and Cincom is a strategic move to penetrate IBM's SNA accounts and prevent NetView/PC from becoming *the* industry standard, analysts said.

Under the terms of the agreement, Cincom will develop software that will allow IBM hosts running Net/Master to share network management information with other processors under Unma. The software will be marketed by both companies and will be available within the year.

More elegant

"When IBM came out with its open network management strategy two years ago, it said users could have one workstation that would control the entire net. It's now clear to users that capability is three to five years away," Gartner Group's Frank said.

Forrester's Colony concurred. "I think Cincom's Net/Master will be installed in tandem with NetView. Many users are employing it for automated operations; Net/Master's automated operations are much more elegant than NetView's," he said.

For example, Colony noted that "users have complained that the Clist language for NetView needs a professional operator to run it, whereas Net/Master is simple to use, and you can write and store programs under the NCL language of Net/Master."

In addition to its alliance with AT&T, Colony sees a similar Cincom/DEC partnership as a distinct possibility.

"DEC choosing to align with Cincom for a network management facility is a natural choice and makes a lot of sense. The two have partnered for years on Cincom's Supra and Total databases," he said.

As a result of the trend towards heterogeneous networking, network control centres in Fortune 1000 companies will use net management workstations from multiple local network vendors, thus creating a large market demand for that product by 1990.

- *Laura DiDio is a senior editor with* Network World, *a US sister publication of* Communications World.

NZ welfare department plans upgrade

AUCKLAND — The New Zealand Department of Social Welfare (DSW) is considering buying a 4000-terminal online system that would put terminals on two-thirds of the DSW's 6000 employees' desks.

Initial inquiries have been made with selected vendors, but project manager Mike Askew says it is expected that the department's batch system will be upgraded.

The DSW at present uses Government Computing Services' (GCS) Unisys equipment with inhouse-written Cobol software. There are some online inquiry facilities via a terminal population of 600 screens.

Askew said DSW was looking at an integrated online system, with office automation capabilities. The intention was to provide better services and facilities for the DSW staff, he said.

After information from vendors has been evaluated, a recommendation will go to the New Zealand Cabinet. A decision will then be made on whether a tender specification will be issued.

Askew said the inquiries with vendors were not implied criticism of GCS, which has also been invited to respond. It was an appropriate stage in the department's computer history to step back and make sure the right path was taken for the future, he said. One of the options being explored is an online system for a GCS-based setup.

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DATA COMMUNICATIONS

Australian defence message system tested 'in action'

SYDNEY — A formatted message system being developed by Computer Sciences of Australia for the Australian Defence Force was subjected to its first international test during Rimpac 88, the maritime and air exercise which began at the end of June and ran until early August.

Thirty-three messages from the allied subset of the system, call Adforms, were used by Australian and US forces during the exercise.

The forces sent and received messages which have been constructed using standard definitions and descriptions for terms used in command and control systems.

While Adforms is being developed specifically for all elements of the Australian forces, it is flexible enough to handle messages produced by the US Message Text Format (USMTF) program.

USMTF was developed by the US defence forces from previous maritime reporting systems.

CSA wrote the software used to create, manage and maintain the Adforms database, and has trained users at Headquarters, Australian Defence Force (HQADF).

CSA and HQADF staff are jointly designing the formatted messages and CSA is collecting, collating and entering data into the system.

Rimpac 88, operating from Pearl Harbour in Hawaii, involved ships and aircraft from Australia, the US, Japan and Canada.

Lieutenant Colonel Malcolm Peck, Deputy Director, Joint Command and Control, Australian Defence Force said before the exercise that "Rimpac 88 would provide Adforms with its first international test."

Rigid testing

Although Adforms had undergone trials previously, the combined exercise in the Pacific had subjected the formatted message system to extremely rigid testing over a period of several weeks.

The forces had benefited from seeing how Adforms performs when used by Australian forces under exercise conditions and how it blends with the USMTF system.

When completed Adforms will enable elements of the Australian Forces to exchange information in both human and machine-readable forms.

Peck said modern technology created the need for a formatted message system.

"Technology enables members of the armed forces to gather and communicate larger amounts of information than ever before," he said.

The only satisfactory method of processing this was with computers, which required structured message formats.

"Also, the unstructured manual systems we have used in the past are cumbersome and imprecise," said Peck."There is an urgent need for a system that caters for the Australian defence force as a whole and which can be used both manually and with computers."

US Customs and corporations plan pilot test soon of international EDI standard

By Barton Crockett

WASHINGTON — The US Customs Service and three US-based multinational corporations will pilot-test a major new international electronic document interchange (EDI) standard later this year.

The standard, dubbed EDI For Administration, Commerce and Transport (Edifact), is the first and only standard ever specified for international EDI networks. The US agency, with headquarters here, will begin testing Edifact in November in conjunction with Texas Instruments, ICI Americas, and North American Philips Corp.

"Unlike with a proprietary system, importers will some day be able to use the protocols they have here to import and export goods to hundreds of ports," said Karen Hiatt, director of the commercial systems division of the Customs Service.

Premier standard

"We believe Edifact will greatly ease the enormous barriers to trade found in customs paperwork and thus help to lubricate the world economy," she said.

The test is expected to attract worldwide attention. "Other users clearly will look at this test to see whether or not they should start using this standard," said Hans Wietling, chairman of the North American International EDI Users Group and project manager for EDI at Sea-Land Corp, a shipping company.

Edifact has been embraced as the premier standard for international EDI by the International Standards Organisation, the European Economic Commission and, in early 1987, the United Nations.

The standard was first patched together in 1985 by users in Europe and North America who were concerned that the diverging sets of standards in these two continents would soon greatly inhibit international EDI.

Edifact combines components of the Ansi X12 EDI standard, which is widely used in the US, and the General Trade Data Interchange, which is the most widely used EDI standard in Europe.

Using Edifact, the three companies involved in the trial will transmit electronically to the Customs Service all the paperwork and accompanying invoices needed for importing goods. This information will be sent in a format called a Customs Declaration Message, which is defined by Edifact.

The data sent to the Customs Service will actually be generated by computers in dozens of these companies' offices in the US and elsewhere. The actual network links will be voice-grade private lines transmitting at 2400, 4.8K or 9.6K-bit/sec that will support IBM 2780 or 3780 remote job entry protocols.

Typically, the network will work something like this: a company importing goods manufactured in Italy would send a Customs Declaration Message to the port where the goods will arrive three or four days before they are due. When the goods arrive, inspectors will run out a computer printout listing the contents of the shipment and the tariffs that should be levied.

Paper saving

Without the EDI system, importers would have to fill out several long documents by hand specifying exactly what the cargo contains and make sure the customs officials receive copies of cargo invoices. This information would be delivered by courier, an expensive and time-consuming task.

"Sometimes importers send us piles of invoices and paperwork as thick as several encyclopaedias," said Hiatt. "Having this information sent electronically makes it much easier to deal with."

Although Edifact is being used only by shipping companies in its first major implementation, its proponents argue that the standard will soon be used by other industries which conduct international business.

Voice, data hookup form bulk of comms budgets

IDG News Service

FRAMINGHAM, Mass — Voice and data transmission services eat up the largest portion of most users' communciations budgets, according to a recent report that details user spending in the US by industry, region and company size.

The 84-page report was compiled by research and consulting company The Market Information Centre, from a computer model it created using survey daa and information from the US Department of Commerce as well as from industry trade associations.

The computer model is based on an electronic spreadsheet and can be used to do a variety of what if analyses on network spending.

Transportation company sites with more than 1000 employees spend an average of $US25.9 million on communications, compared with an average of $US8.4 million for other industries.

The transportation industry spends $US6540 per employee on communications, compared with an overall industry average of $US2078.

Federal government sites with more than 1000 employees have average annual communications budgets of $US10.6 million and spend an average of $US900 a year per employee, according to the report.

Other industries studied were: agriculture, mining and construction; business and professional services; education and state and local government.

Also, health care, insurance, manufacturing, utilities, and wholesale and retail industries were examined.

The model depicts spending for the following communications related areas: staffing, overhead, voice and data line charges, leased equipment, equipment acquisition, maintenance, training, capital budgets, and travel and entertainment.

It measures spending for user sites in four size categories — under 50 employees, 250 to 1000 employees and more than 1000 employees — and in seven geographical regions across the US.

The model and report allow users to perform various types of ratio analyses, such as communications spending as a percentage of organisational revenue, or in comparison to the MIS budget.

Users can them compare what they are spending with what their peers are spending.

Spending is tracked for 1987, 1988 and on forecasts for 1989. Total communications spending in the US is estimated by the model to be $AUS230 billion in 1988.

All 12 industries categorised spend the biggest chunk of their communications budget — usually about one third — on voice and data transmission lines.

A typical commmunications budget for a user site with more than 1000 employees allots 36 per cent for carrier services.

This is the fourth year the company has conducted a spending study and the second year in a row it has developed a model.

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DATA COMMUNICATIONS

Fax boards: technology will soon meet the needs of users

By Mark Brownstein

MENLO PARK, California — Manufacturers of facsimile boards acknowledge that their products suffer limitations in comparison to dedicated fax machines. But they feel technology will soon successfully meet user demands.

Better performance will result from new communications standards as well as from new technology for both fax boards and fax modems that provide the communications engine for transmission and reception, they say.

Fax boards can already receive any facsimile sent by a fax machine or board that complies with the CCITT group III standard. They can send text and, and many cases, graphics that reside on a computer's hard or floppy disk.

Fax boards do not directly replace fax machines, however, because they require a scanner or fax machine to capture the image of any hard copy transmitted. Also, stored images and received faxes often take up significant amounts of hard disk space, and printed output takes longer than with a fax machine.

Fax boards do provide intelligence and scheduling capabilities that are missing from most fax machines. "The fax machine is a shared resource," said Peter Keenan, national sales manager at Brooktrout Technology, which makes a fax board called the Fax Mail 96.

"A fax board can harness the inherent power in a PC. You can use its scheduling capabilities to send faxes in the middle of the night and thus save the company money," Keenan said.

When coupled with a laser printer, a fax board could produce output that was possible only with the most expensive standalone fax machines, which costs $US5000 to $US6000, Keenan said.

Fax boards conform to CCITT group III standards for facsimile transmission. The standard calls for a top speed of 9000 bit/sec, with a drop in speed to 4800, 2400, 1200, or 300 bit/sec when needed to compensate for poor telephone-line quality.

A significant percentage of fax boards are built around fax modems made by Rockwell International. "Rockwell owns the domestic market, but is feeling pressure from the Japanese," said Joel Borden, product marketing manager at Complete PC.

The net result of the competition will be significantly lower costs for boards that provide full Group III compatability, according to vendors.

Rockwell is now putting significant effort into marketing a recently announced fax modem that is capable of transmitting data at 14,400 bit/sec. This is 50 per cent faster than standard Group III faxes and can result in significant telephone-line savings, according to Rockwell's Vijay Parikh, product line manager for image modems.

However, stepping beyond the 9600 bit/sec Group III standard requires either new standards or that both sender and recipient use the same vendor's compatible cards for high-speed operations.

Similar extensions of the Group III standard include a 300 by 300 dot/in resolution mode for image transfer. Again, these require similar equipment at sending and receiving machines.

Development is also proceeding for other architectures and operating systems. Brooktrout is working on versions of its board for Unix, Xenix, Macintosh, and OS/2 systems. Other enhancements include a move toward mailmerge capabilities, where a series of individual letters can be assembled and transmitted.

Manufacturers are only now taking into account the fact that fax boards typically are not assigned to dedicated phone lines. At least one US company, Complete PC, offers a board that allows users to indicated that a call is voice call. Failure to respond to the prompt activates the fax modem and allows the fax to be received.

With fax boards expected to appear on many machines and with capabilities continuing to improve, these boards may take a significant place in most PCs, both as devices to transfer formatted text and graphics and as rapid file-transfer devices.

- *Mark Brownstein is a writer for* Infoworld *a US sister publication of* Communications World.

Fibre optic cable used in upgrade of airport's radar system

SYDNEY — The Department of Transport and Communications has completed a major upgrade of Sydney airport's radar system, using fibre optic terminal equipment designed and made by Integral Fibre Systems (IFS).

Fibre optic cable was laid around the international airport to link existing radar transmitters with the operation centre. This replaced coaxial cable which was deteriorating due to salt water and vibration.

IFS said the fibre optic cabling provided a number of benefits at no extra cost, such as greater bandwidth and longer cable runs without costly repeaters. It was also inert to the environment in which it operates, regardless of humidity, earth loops and electric noise.

The cable is also said to be inert to lighting strikes, a concern in long hauls of metallic conductors and a major problem at airports, where runs of one to three kilometres are common.

A department design engineer said: "The project involved the task of combining the separate luminance and sychronising signals to a single composite optical signal; then the sychronising signal needs to be extracted again at the far end. Special techniques were developed by IFS in order to achieve a flat response and a very low distortion of less than 1 per cent over a wide bandwidth."

The upgrade now offered a reliable fibre optic link with interfaces that provide improved performance, leading to greater air safety.

Further developments of the IFS SY9900 video system were made for general industry. The product is now available for other commercial applications.

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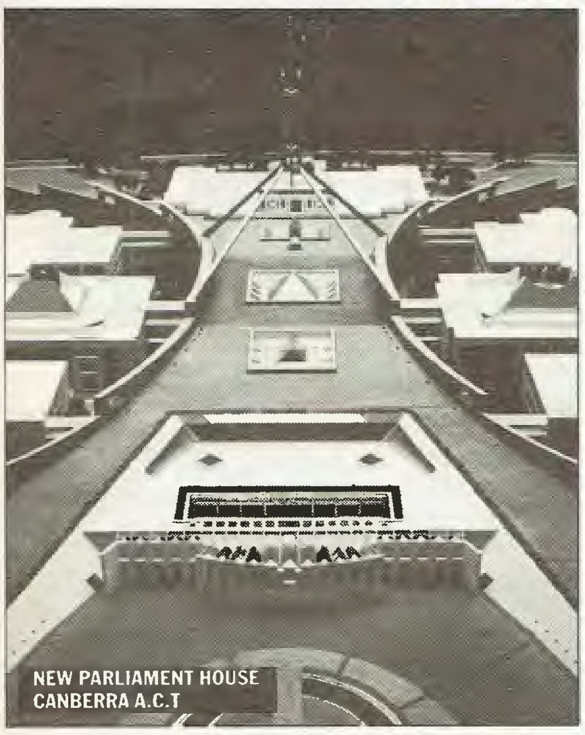

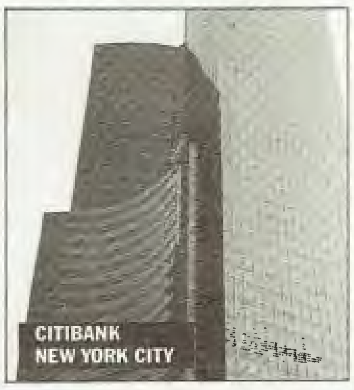

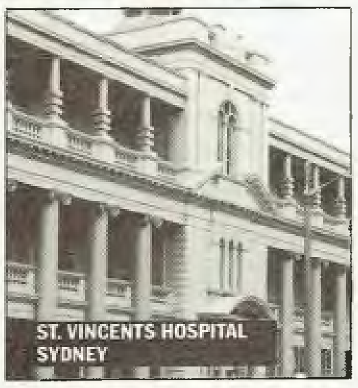

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Europe deal for Infonet signals battle stations

IDG News Service

PARIS — A consortium of European telecommunications authorities has signed an accord with Computer Sciences Corp that will by the end of the year give them a majority stake in the US software and services company's Infonet data communications subsidiary.

The deal marks the start of a head-on battle between the European telecommunications organisations, known as PTTs, and such major US companies as IBM and Electronic Data Systems, which are already jockeying for position in the nascent worldwide market for data management networks.

Marcel Roulet, head of France Telecom, the French telecommunications authority, said here in an interview that the deal is important "symbolically" in that it demonstrates the PTTs' will to be competitive in this market.

"As they market to large companies against large competitors such as IBM and EDS, they have a problem offering end-to-end services to their customers," said Randy Lintecum, marketing vice-president of Infonet. With the Infonet network, he said, the PTTs will now be able to offer a "seamless global service" for large companies seeking one-stop shopping and one-stop billing for their international data communications.

Revenue growth

The agreement, signed late last month in Los Angeles, gives 15 per cent shares in Infonet to both France Telecom and the West German Bundespost, and options for the acquisition of 5 per cent shares by Sweden's PTT, Belgium's RTT, and Spain's Cia Nacional de Telefonica, according to Lintecum.

He explained that Infonet expects to sign on another 10 "foreign partners" by year end, lowering Computer Sciences' share to 30 per cent. British Telecom, he said, "has decided not to participate at this point".

Officials refused to divulge the value of the deal.

Infonet, which offers services and support in 31 countries, sees the agreement as significantly strengthening its role as a provider of international telecommunications services.

"We expect that this will accelerate our growth in revenue by helping us into new markets," Lintecum said.

He said Infonet expected to generate $US100 million in revenues this year, up from about $US85 million last year. Although he refused to provide specific figures, he said the company would show a profit.

Infonet already has partnerships with many of the European PTTs enabling interconnection between its services and the local X.25 packet-switching networks. Under the new accord, the Europeans will take charge of the company.

Siemens wins in Bundespost bid

BONN — West Germany's Siemens AG has won a Dm60 million $(A40 million) contract from the country's telecommunications authority, the Bundespost, to expand the national packet-switching network, Datex-P.

The contract concerns the first leg of an expansion project, running through to 1996, that insiders estimate will be worth between Dm300 and Dm500 million ($A198 and $A330 million).

West Germany's AEG Olympia and Canada's Northern Telecom lost their joint bid for the contract.

Until now, Northern Telecom had supplied the Bundespost with Datex-P switches.

Flexnet serves up a DDS smorgasbord

By Noel Bennett

MELBOURNE — Flexnet, the latest product in the evolution of services available under the Digital Data Services umbrella, will offer customers greater flexibility and network control over their Digital Data Network services, according to Telecom. This product, in conjunction with ISDN, will bring a smorgasbord of telecommunications options, covering voice, data and video, for large private and commercial institutions.

Indicative of the step-by-step evolution of DDS since its inception in 1982, Flexnet follows upon the introduction of TDCC/MACS (Time Division Crops Connect/Management and Control Systems) earlier this year.

In addition, Telecom says Flexnet, in conjunction with TDCC/MACS, will become "the pace-setter for future DDS enhancements over the next five years".

Flexnet not only offers faster transmission speeds and the ability to integrate various services, but also greater reliability in a network.

The flexibility will come from customers being able to choose from a range of interfaces on their premises to the TDCC/MACS via a Unimux (Universal Multiplexer).

Essentially the Unimux will enable several data streams ranging from low-speed synchronous/asynchronous links to high-speed wideband tragic to be combined into a 2048K-bit/sec stream. Telecom says customers will be able to configure the multiplexer for interface types, speeds and allocation of time slots in the 2M-bit/sec aggregate streams via a control terminal connected to the multiplexer.

Where complex networks involve several Flexnet services, customers will be able to control and co-ordinate their network requirements through the Customer Network Management System software residing within the multiplexer control terminal. This will allow customers to establish semi-permanent connection between network ports, to reconfigure the network, change the characteristics of access ports, initiate testing and maintenance procedures and view the status of the network.

Telecom says Flexnet will be available in about 12 months time.

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TELECOMMUNICATIONS

THE GREAT ISDN DEBATE

What can it do for me? A discussion of the potential benefits and drawbacks

IDC's Steven Kropper, senior consultant, telecommunciations, and Richard Villars, senior market analyst, local-area networks, recently discussed the potential benefits and drawbacks of ISDN as a data service, as some products and services are finally beginning to appear in the US marketplace.

Q. How would you define ISDN?

Villars: Some people look at ISDN as some sort of ubiquitous network. Yet I see it as more of a set of standardised communication protocols that enable users to integrate their voice and data communications as well as provide a common application platform for developing new interactive or co-operative applications.

Kropper: There are two sides to ISDN — services and equipment. ISDN services integrate services available today from the telephone companies. It is the highway intersection where analogue voice and newer data services converge into a digital world. ISDN embodies technological changes to better use bandwidth and cable facilities. ISDN saves on equipment because it integrates the transmission services which link customer premises equipment. For example, PABXs and Lans or PCs and telephones could be integrated.

Q. Where does ISDN fit in the Open System Interconnect stack?

Villars: It is another option comparable to the Lans. A lot of people on the data side who have already decided to go with the Lan approach would look at ISDN as a way of providing more flexibility in inter-Lan connectivity. I would see some voice people looking at ISDN as a way of bringing voice more fully into the OSI stack.

Q. What trends in computing are forcing MIS departments to take a closer look at ISDN?

Villars: People have been talking about peer-to-peer communications; in a peer-to-peer environment networking functions become much more important because you are doing routing. The network itself has to be responsible for determining where information is flowing to, and should be able to access multiple points. From that point of view, the MIS people are being forced to look at ISDN, because their more traditional world is going away. The computer world is moving towards a more switched environment, which is what telecom has always been focused on.

Q. What will determine ISDN success in the data world?

Villars: The real battle in the long run is to provide that connection between ISDN and a private corporate data network. The longterm success of ISDN in the data world will depend upon how well it can support the development of data processing applications for the MIS world — how well it can build applications for computers that can take advantage of the ISDN features. ISDN will be used where it can provide redundancy or provide some cost efficiencies. ISDN will succeed in the MIS world when it can offer applications that improve communications between the devices as well as improving or tying in voice and data applications at a level higher than just telemarketing.

Q. What ISDN services are available now? What is missing?

Kropper: Automatic number identification is here. You can combine voice and data on one wire, with these options: 1B+D, 2B+D, and 23B+D channel services. What is still missing is ubiquity of switched digital lines. As long as switched analogue lines dominate, one computer cannot instantly talk to all other computers.

Villars: You cannot network ISDN from one central office to another and exchange the ISDN information because there is no out-of-band network, which is Signalling System 7, available from the local telephone companies. Already, AT&T, MCI, and US Sprint have it. Currently, the optimal ISDN option from a data standpoint is to bypass the local central offices.

Why all the interest in ISDN if it does not really offer a whole lot of new technologies?

Kropper: ISDN will make establishment-to-establishment communications easier. It allows savings of bandwidth.

Villars: Included in ISDN on the data side are X.25 packet-switching services, Dataphone digital services, and switched 56 lines. On the voice side, there are public-switched voice services, which are currently carrying our analogue data.

ISDN co-opts all of these into itself. The only thing it does not co-opt is Lans. However, ISDN can sit above a Lan on the OSI stack . . . or it can offer something that Lans cannot offer, which is that wide-area connection.

Q. What currently available ISDN services would you recommend, or not recommend today?

Kropper: I would recommend ANI and some applications for packet-switched data on the D channel. Central office-based Lan is an ISDN-related service. Right now, however, if a user wanted to develop in-house network management skills, I would not recommend a CO-based Lan.

Villars: I could recommend primary rate now from a voice side. I could not recommend ISDN at all from an internal network point of view. There are very few data features currently available.

● *From* Applied Networks Report, *published by IDC, US and available from IDC Australia, 56 Berry St, North Sydney, NSW, 2060. Tel: (02) 922 5300.*

Packet-switching epitaphs premature

By Roy Rosner

ARCHITECTS of Integrated Services Digital Network (ISDN) are trumpeting the embryonic technology as the sends-everything communications pipeline of the future.

If the promises of these visionaries come true, telephone customers of the 1990s will be treated to a candy store of services delivered on an all-fibre all-digital worldwide telephone network. Flowing through this network will be data, voice and electronic mail, videotex, alarm services, desktop teleconferencing, call previewing, facsimile, radio paging and others.

According to ISDN technologists, both packet switching and copper twisted-pair wiring will become anachronisms as fibre optic networks spread. Businesses will scrap plans for private packet networks, they say, as rates for circuit-switching transmission undercut packet switching tariffs.

Fortunately for the packet industry, this theory has some large holes. Chief among the gaps is the assumption that lower cost is the primary attraction of packet switching.

In fact, one of the most important advantages of packet switching is its translation capability. Packet networks allow different vendors' computers to communicate with each other in their own languages, with the network serving as an interpreter. As a result, data can be exchanged among many types of computers, regardless of their internal architectures.

The packet-switching industry is rooted in the widely accepted CCITT X.25 interface standard, which defines the user-to-packet-network interface. At least 100 countries now offer packet-network services.

Packet networks shoulder the communications processing tasks that would otherwise tie up expensive mainframes. They perform code and speed conversion between dissimilar computers, reduce the number of physical ports and lines and add levels of security within the network.

Packets travel from switch to switch, with each switch retaining a copy, until the next switch or the final destination signals that its twin has arrived. If the transmission if interrupted, the twin is released.

Using this hold-and-forward pattern, switches can respond instantly to traffic tie-ups of outages by rerouting packets along alternate paths. This fail-safe mechanism is not found in voice-tailored circuit-switched networks, which require long setup times to establish a dedicated path for data transfer.

For all of these reasons, many businesses would continue to use private or public packet networks even if long-distance transmissions were free. In all likelihood, they will be anything but that on an all-fibre network. Stringing fibre to every household and business in the US could cost billions of dollars.

When ISDN or a variant of it emerges, an enormous market will open up for ISDN-compatible packet-switching equipment, including high-speed, programmable packet switches and network-access computers. This will happen regardless of whether the transmission is through fibre or copper wire.

It will be up to today's packet-switching suppliers to develop new equipment interfaces compatible with the ISDN recommendations currently under review by international standards bodies.

● *Roy Rosner is vice-president and general manager of network products at Telematics International.*

Phone companies in US look to choice of standards

Telecom Australia is actively putting into place its Integrated Services Digital Network (ISDN) service. Will the promises eventuate, are there other options? Elisabeth Horwitt of US *Computerworld* gives a pen picture of the US position.

FRAMINGHAM, Mass — Think again, all you MIS and telecommunications managers who assumed that ISDN would eventually become the universal telecommunications standard, never mind how long it takes. Your neighborhood telephone company may have other plans.

It's not that the carriers are refusing to support Integrated Services Digital Network (ISDN) — on the contrary, they are trumpeting their future ISDN compliance as proof of their sensitivity to users' needs. But push some of their spokesmen hard enough, and you discover that while they fully intend to come out with services based on ISDN specifications, they are by no means committed to junking all of their existing proprietary enhanced services. We're talking co-existence, not migration, here.

Customer choice

Take Pacific Bell's Project Victoria, a technology that, like ISDN, allows users to send multiple voice or data transmissions over ordinary telephone wire. The carrier conceived of the offering not so much as an ISDN predecessor than as a lower cost ISDN alternative aimed at homes and small businesses that would rather not pay for special ISDN telephone sets and expensive ISDN boards for their personal computers. While the project has been put on indefinite hold because of regulatory difficulties, the idea was to allow customers to choose, according to their needs, the best way to access Pacific Bell's services.

Nynex has a similar strategy in mind for its Pathway family of networking services as well as the recently announced virtual private networking product.

The regional Bell holding company is committed to rolling out ISDN-based network offerings beginning in early 1989 but does not intend to replace existing network services with ISDN versions, said Joseph Gustafson, Nynex's director of ISDN and Centrex product development.

Installed base protection

Instead, Nynex promises to ensure that users of its existing proprietary services will be able to communicate with customers who choose the ISDN-based services. This is a tall order, Gustafson admitted, but it is the only way to protect its customers' existing equipment base — not to mention its own investment in central office technology to support Pathway.

Vendors like AT&T and Northern Telecom are working to ensure that their slightly different versions of an ISDN switch will communicate. Organisations such as the ISDN Users Group will be working with vendors toward a consistent set of early ISDN applications.

If the above projects bear fruit, users will be able to use a variety of networking services and equipment to access ISDN applications — without having to wait for vendors to agree on and implement a truly universal ISDN standard. That would be fortunate, considering that we may not have universal ISDN compliance for the next 10 years — or ever.

● *Elisabeth Horwitt is a senior editor,* Networking, *with sister US publication,* Computerworld.

LOCAL NETWORKING

PC AND TERMINAL-TO-HOST LANS, GATEWAYS, MICRO PRODUCTS

DEC, Apple define framework for Macintosh-Vax connection

BOSTON, Mass — DEC is opening more doors for its customers to allow them to mix with neighbors using different equipment.

At a two-day developers' conference, DEC and Apple defined a framework for connecting Apple Macintosh personal computers with DEC Vax/VMS systems

Apple and DEC told developers that the companies would place highest priorities on meeting the most common user needs — file services, print services, database access, network management and network terminal services.

Enduser products and developer toolkits for creating new capabilities will begin to appear in the summer of 1989.

The joint developers' conference represents the first of several steps in fulfilling the commitment made in January to provide a jointly developed framework for integrating Macintosh personal computers and AppleTalk networks with Vax systems and Decnet/OSI enterprise networks.

By having a consistent technical framework, developers will be able to plan, implement, and deliver a new generation of distributed applications and network intelligent productivity applications using the Macintosh as a versatile frontend for Vax-based applications.

According to the companies, the benefits of this seamlessly integrated environment include the consistent Macintosh user interface, AppleTalk network transparency and services, Vax/VMS computing power, and enterprise-wide Decnet/OSI networking capability.

In addition, the joint development program will provide tools to add new capabilities to existing software products and conversion utilities for migration to the new generation of products, thereby protecting the strategic investments made by customers in third-party hardware and software products.

Providing these capabilities will involve many key components including:

- AppleTalk for VMS, the basic development platform for integrating AppleTalk and Decnet/OSI networks, will be significantly enhanced to include wide-area routing capabilities via Decnet tunnelling and AppleTalk/Decnet gateway functionality;
- A Vax-based AppleTalk Filing Protocol (AFP)-compliant file server will be included as part of DEC's Macintosh integration offering;
- Print services will allow users from both environments to access PostScript printers both AppleTalk and Decnet/OSI neworks as well as print queuing and other services available on Vax/VMS;
- Network management functionality that allows for management from both AppleTalk and Decnet network will be provided;
- Terminal access and X-Windows support on the Macintosh to access VMS-based applications;
- Apple and DEC announced specifications for client and server implementation that provides support for SQL and CL/1 database access;
- Apple will support Digital's Document Interchange Format (DDIF) document content standards for document interchange between Macintosh and VMS systems.

Many new products introduced at Macworld Expo/Boston

BOSTON — Apple saw the connectivity options for its Macintosh family take a giant step forward recently as networking product introductions permeated Macworld Expo/Boston like the haze that was enveloping the city during the three-day show.

The introductions fed off Apple's aggressive Macintosh connectivity strategy, which targets an enormous installed base of IBM, Digital Equipment Corp and multivendor networks.

3Com Corp headlined its attendance with the announcement of an Ethernet adapter for the Macintosh SE and laid out a road map of its future Macintosh connectivity plans.

The Etherlink/SE will operate on 10M bit/sec Ethernet networks and ship with Telenet Communications terminal emulation software.

The adapter is also compatible with 3Com's 3+ for Macintosh, Apple's Appleshare and Tops, a network operating system issued by Tops, a division of Sun Microsystems, the company said. The adapter will be available in December for $US595.

The Santa Clara based concern also fleshed out its strategy for connecting the Macintosh to its 3+Open Lan Manager, which will begin shipping in October.

The company said the 3+Open Lan Manager will support the Appletalk Filing Protocol, Apple's Printer Access Protocol running on the 3+ Open server and Apple-share workstation software.

Digital Communications Associates, (DCA) also expanded its Mac connectivity options with a rollout of software for its Macirma products that enables the Macintosh SE and Macintosh II to access IBM mainframes.

DCA's new Macirma API software set was a series of specifications that enabled users and developers to write customised programs in various computer languages, the company said.

Macirma API supports the C language and Apple's Hypercard application and scripting language. It will be priced at $US195 when it ships in the fourth quarter of this year.

Network General Corp rolled out a model of its Sniffer network protocol analyser at Macworld. The PA-1310 Appletalk Protocol Suite is priced at $US995.

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LOCAL NETWORKING

Growth of PC products forces strategy rethink

By Mary Petrosky

FRAMINGHAM, Mass — The evolution of personal computer hardware and software is forcing many network planners to rethink their network strategies.

But the abundance of new options such as multitasking personal computer operating systems with builtin communications functions is overwhelming many users.

"The PC market is in turmoil now," lamented the manager of technology assessment at a West Coast bank who asked not to be named. Although the bank is committed to distributed computing using personal computers and local networks, uncertainty about what hardware platform and what operating system to use has sent planners back to the drawing board.

IBM effectively splintered the once open personal computer industry with the introduction of the Personal System/2 and multiple versions of OS/2.

Late last year, Microsoft and IBM began distributing OS/2 for personal computers based on the Intel 80286 and more advanced Intel microprocessors. Much of corporate America, however, has a hefty installed base of microcomputers based on older Intel 8086 and 8088 microprocessors. These machines will have to be replaced or upgraded to support OS/2.

And because OS/2 requires so much memory — multiple megabytes in most configurations — even personal computers with the proper microprocessor will need to be upgraded with considerably more memory. "There isn't a clear picture of the total costs," the bank manager noted.

Consternation

IBM's decision to make the Personal System/2 a proprietary system is also causing managers considerable consternation. The Personal System/2 represents "the end of the standard PC", noted Tony Wilkinson, who manages small computer systems special projects for Security Union Title Insurance in California.

"I see the PS/2 as being akin to the System/23 and System/36 — it will sell well, but it's a closed solution. The PS/2 is positioned to be bought by data processing and given to endusers to maintain control," Wilkinson said.

Local network planners at several major corporations said IBM is shooting itself in the foot with the Personal System/2 and OS/2 strategy. IBM "decided to go back to a closed box and, in essence, a proprietary operating system, and that's not going to wash in the user community", said a systems specialist at a chemical company who requested anonymity.

Sentiments such as this are common, even though the multitasking capabilities of OS/2 and the ability to access more than 640K-bytes of memory are appealing.

Multitasking, for example, could be beneficial in helping centrally manage networks by making it possible to query networked personal computers without disturbing endusers, according to the West Coast bank manager. But the manager said he cannot justify the cost of beefing up personal computers with the necessary memory and processing power for multitasking.

Others agree. According to M Jones.

Continued page 17

Prices slashed — still profitable

SYDNEY — Believing that severe price cuts will bring about volume sales and that Australian prices were also badly out of kilter with those prevailing in the US, Computer Networks has slashed prices by an average of 30 per cent for its Amtec NetWare, an OEM version of Novell NetWare.

Managing director Simon Downey said even with prices 3 per cent below those of competitors — $A2800 compared with a claimed $A4123 in one instance — the company would be still making a profit and would be able to grow "comfortably". The pricing move would bring Amtec NetWare into line with Novell's US price list for the NetWare component and would also remove the "grey areas" of the product line whereby, for example, users could buy the product in the US with the saving paying for a holiday there.

Noting that Novell itself was "happy" about this move, Downey said the pricing move, while causing an upset in the Australian market, would help the company to gain a dominant share of the Novell networking market, presently held by the distributor, Data Peripherals.

The move would also strengthen the company's relationships with its dealer network.

Computer Networks, originally from New Zealand and with its Sydney head office dating from 1987, had a turnover of $A6 million last year, expected to grow to $A20 million this year.

Of this turnover, about 10 per cent came from the Novell NetWare component with the balance split evenly between the company's Amtec workstations on one hand and file servers and communications products on the other.

Much of the Amtec range has been designed and is being manufactured in Australia, the company said.

Campus puts video lessons on Ethernet

CANBERRA — The Reid campus of the ACT Institute of Tafe has installed a broadband Ethernet backbone to interconnect its campus PC sites and allow for distribution of video lessons.

John Connelly, network manager, ACT Institute of Tafe (Reid Campus), said: "The broadband Ethernet backbone not only allows the college to connect its previously separate five Novell networks, but also to run distributed video and support a campus security system.

"Video can be sent directly through the network and pulled down by ordinary television sets, as if the signal was coming through an ordinary aerial.

"An advantage of the broadband backbone is that the campus network can be managed from one desk. As far as I know, there is nothing on the market to do this job better," he said.

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NE30

Net boosts staff productivity

LONDON — UK-based management consultants Touche Ross said that a local-area network in their accounting and auditing department had boosted staff productivity by up to 25 per cent.

In a trial period between November 1986 and November 1987, 25 staff were given shared or personal workstations on an Ethernet network. Facilities included mainframe access, word processing and spreadsheet programs.

A Touche Ross project manager, Stephen Giles, said that inexperienced computer users found a major change in their work patterns when using the network, compared with working on standalone PCs.

About 25 per cent of their time had previously been spent on dictation, memos and reports, but after the installation of the network, time spent on these duties was cut to 7 per cent.

Overall productivity increased by up to one-quarter. Users found that is was easier and quicker to access, edit and store data. The amount of manual work was also reduced.

Managers noticed a dramatic increase in the use of PCs. The amount of time spent on word processing and data retrieval rose from 7 per cent to 15 per cent.

But 38 per cent of users wanted more training in order to use the applications. Users also suggested that efficiency would increase if staff had their own workstations rather than shared ones, a suggestion that was implemented.

The original Ethernet system will be swapped for IBM's Token-Ring network to ensure compatibility with Systems Network Architecture, IBM's network standard. Touche Ross is now looking to introduce similar networks in other departments.

High-speed Lan on way

SYDNEY — Increasing user demand for high-speed local-area networks has prompted one networking expert to predict that IBM will announce a 16M-bit/sec Token Ring Lan before the end of this year and will have the product available by late 1989.

According to Proteon founder and president Howard Salwen, while terminal traffic on most Lans is very modest by comparison with theoretical limits, growing demand for high volume file transfer capability such as online images is driving Lan design.

The demand for high-speed Lans will also be met by the FDDI (Fibre Distributed Data Interface) high speed fibre optic token-passing ring once the technology gets through a trouble "Beta" testing phase.

"The 100M-bit/sec FDDI Lans will not be available until late 1990 or early 1991," Salwen said, on a recent visit to Australia. "After that there will be a shake-out that will see interoperability established."

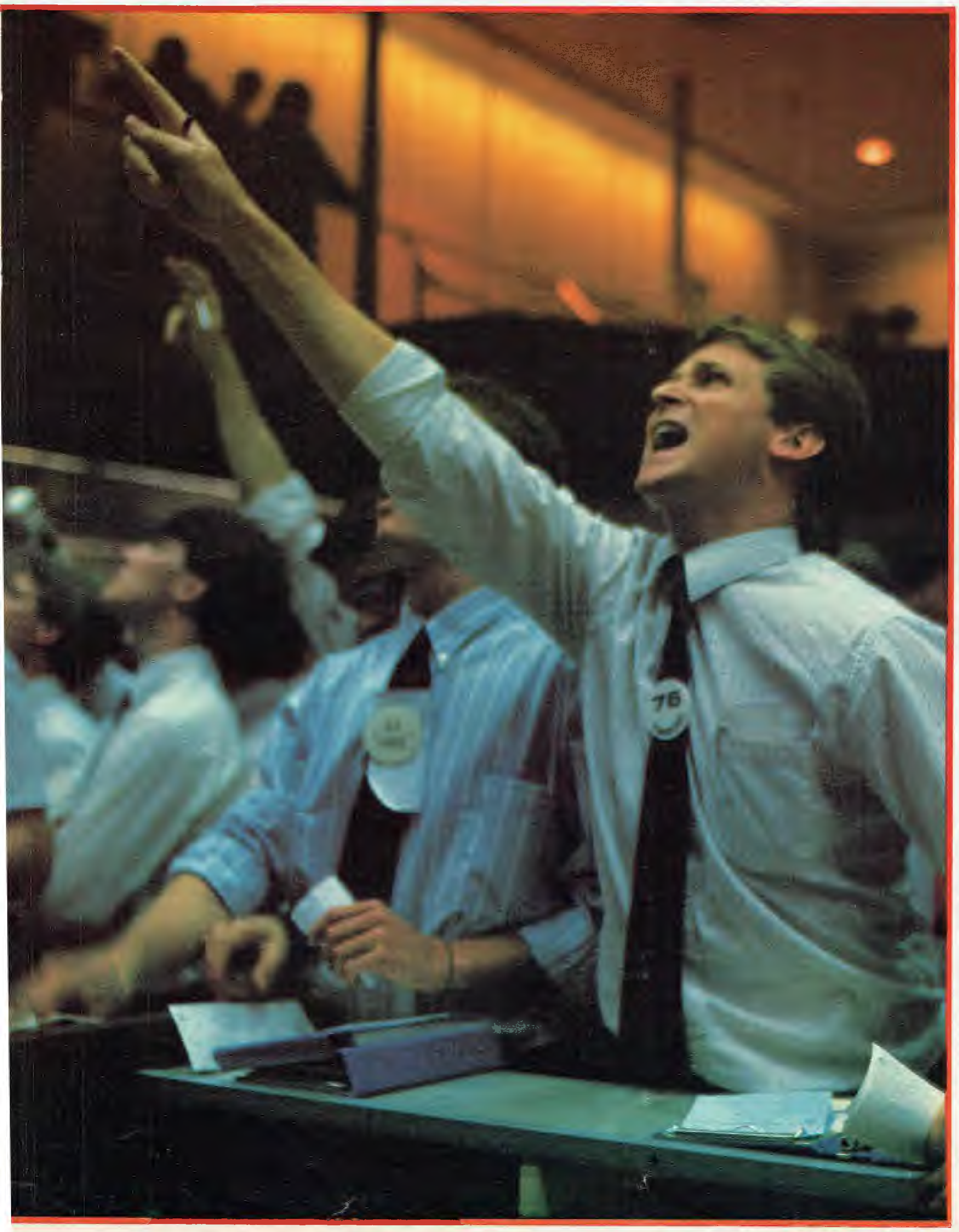
Proteon, which has been working on a standard for the 100M-bit/sec token-passing fibre optic ring technology since 1982, has had trouble picking the standards for workstation management.

The problems of configuration, and of which station starts passing the token, have yet to be resolved, Salwen said.

"If two makers were to build FDDI networks now, they would undoubtedly build different systems," he said. "What is the point without interoperability?"

The use of bridges or routers for interconnecting Lans is also the subject of much conflict and confusion in the Lan business, according to Salwen.

Bridges are low level ISO layer two devices, which when used for interconnecting already-linked Lan may allow data to circulate in multiple paths.



Product growth forces planners to rethink

Continued from page 16

desktop computing consultant for Phillips Petroleum, Corporate Staff Services Division, the OS/2's multitasking ability would enable users to simultaneously conduct host sessions and communicate over a local network.

However, he said, the feature is a "bell and whistle that doesn't buy us that much when you consider how much it costs". Phillips Petroleum uses Digital Communications Associates' Irma boards to link personal computers to IBM hosts. The company is happy with this arrangement because it works and it is not expensive, Jones said.

As for using OS/2 on servers, he said Phillips Petroleum prefers Unix because it was designed to be multitasking and to support multiple users. "OS/2 will have a hard row to hoe in that there are a lot of people leaning toward the Unix environment," Jones said. "You don't have to go broke on hardware with Unix."

Unix is also looking more attractive because vendors are working to mask Unix's arcane interface with so-called "friendly front ends". To that end, AT&T and Sun Microsystems have joined forces to develop Open Look for Unix, and several local network planners believe IBM will adopt a similar front end.

Lowered costs

Although almost a dozen local network planners contacted by *Network World* had copies of OS/2, only two had copies of the more advanced OS/2 Extended Edition. Few planners see any reason to use OS/2 Extended Edition because most consider it a resource hog.

OS/2 Extended Edition comes bundled with Database Manager, a database management application, and the Communications Manager, a collection of connectivity options including IBM 3270 terminal emulation and advanced protocols such as IBM's Advanced Program-to-Program Communications.

The functions of OS/2 Extended Edition are not necessary for each networked microcomputer, according to local net planners. They would rather implement communications and database functions on a server or gateway. It is simpler and less expensive to do it that way, said William Evans, a software engineer in distributed technology planning at Baxter Healthcare.

● *Mary Petrovsky is a bureau chief with sister US publication.* Network World.

Lan or multi-user system? The many questions for managers

By Mitchell Duncan

LOCAL-area networks could be said to have matured as a viable technology. Corporate (MIS) managers now consider PC Lans as a viable alternative to the use of online terminals. A large base of installed personal computer users has assured the market that customers are willing to forgo the processing power of their mainframes in return for the flexibility of PCs.

There are, however, many traps in the decision to buy large numbers of standalone personal computers, not the least being the problem of managing this distributed processing power. Some companies have taken the "head-in-the-sand" approach by stating that those users with PCs become their own system managers; and live (or die) by the consequences of their own actions. Other companies have developed a PC strategy which has often led to the networking of PCs in their offices. The management of these networks became the responsibility of the DP department or someone else designated as the PC Lan manager.

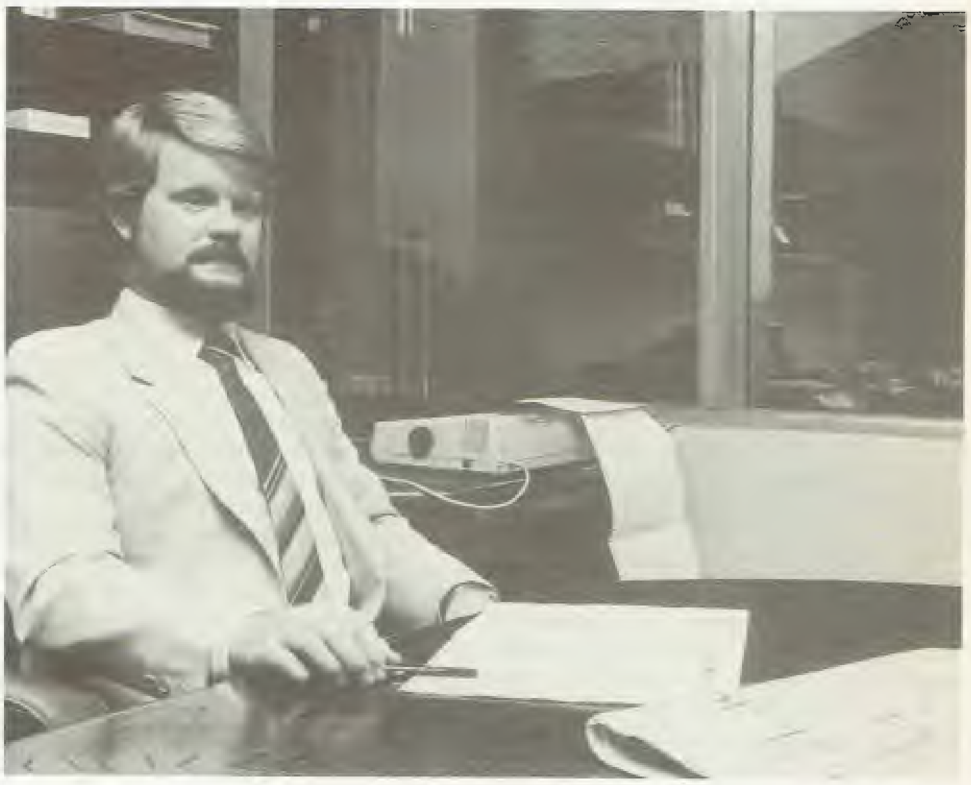
Strategy

Some corporations may be about to make a decision about large-scale networking of their terminals and PCs. For these companies, data processing is based on large mainframe equipment and they have decided to expand their computing facilities, but have no PCs, or have some doubling as terminal equipment. Alternatively, the companies have a mainframe base but have a number of PCs already installed, and may even have some of these connected via a Lan. They are wondering how to manage this proliferation of equipment.

For many system managers this problem may be approached by asking a number of (heretical!) questions. These may include: "Do we want to purchase any/extra PCs?", "If so, do we need to instal a Lan?", "Would not a multi-user system perform the same job, particularly if it is a frontend processor to our mainframe?" For some MIS managers these are valid questions with a sound, rational basis. They are based partly on the observation of the problems encountered by colleagues who have opted to "take on" Lans.

Before one launches into a discussion of the pros and cons of such decisions, one needs to establish the fundamental characteristics of the Lan and the multi-user system. Generally, the multi-user computer can be described as a centralised system incorporating centralised processing and data storage capabilities, using terminals with no data storage capacity. The Lan, however, is characterised by its distributed processing, data storage and topological nature (star, bus or ring). It would seem that any comparison between a Lan and a multi-user system is not possible for this reason, but similar configurations of both types of systems may be favorably examined and compared.

The adoption of this strategy allows us to make meaningful comment about the issues which many MIS Managers have found to be problems; only after installing a Lan. These issues include data backup effectiveness, system security, system reliability, future expandability and multi-vendor connectivity and interworking.



Mitchell Duncan . . . 'predominant among all these issues is cost'

At first glance these issues seem tired, hackneyed subjects used by vendors and consultants to buoy up purchasing proposals. They are of great consequence in a decision-making process in which system expansion is being considered. The wrong decision can compromise the existing system and become an expensive ongoing management overhead.

All the issues stated above relate to control of a network or system. The multi-user operating system is designed such that centralised control is easy to implement. Backup of data for archiving is a routine matter and security is an issue which requires merely a careful attention to detail and regular monitoring.

In a Lan environment, however, backup of data needs to be approached entirely differently. If the Lan is implemented on a large "file-server" (implying that the Lan is processor-distributed but not data-distributed) then backup is nearly identical to that of a multi-user system. The problem of backup becomes more complex with a "data-distributed" Lan. Each workstation user must be responsible for either performing their own data backup or sending their data to a master station for backup. In some cases this master station may be the corporate mainframe (accessed via a gateway).

Security, reliability

Security in the Lan environment is a problem which is only just beginning to be seriously addressed by vendors of hardware and software. Distributed data and processing Lans present the easiest target to any would-be miscreant. Well-established multi-user (mini-computer) security procedures are being copied by the Lan manufacturers. Lans are still arguably inadequate in their security provisions by virtue of the manufacturers' keenness to create an easy-to-use system. In the final analysis it is impossible for a system manager to determine what is being done to a standalone PC if its interface cable has been disconnected. On a multi-user system, however, it is possible to track and limit user access to the system and data files.

For the user, system reliability is of prime importance. Centralised systems fail more dramatically than a distributed Lan. (Everyone knows exactly when the system went down!) This may tend to distort and inflate perceptions of unreliability in any network. Failure of a terminal node on a distributed system (unless it is Token Ring or Token Bus) is not likely to cause complete network failure. Any reliability figures quoted by vendors need to be qualified carefully, particularly for Lans, since these may relate only to small sub-system components of the hardware.

Two issues in which one begets another are those of "expandability" and "connectivity". The latter issue is becoming an industry buzzword, with only a limited amount of coherent information from vendors. Anyone wishing to undertake a major expansion of a multi-user system is largely tied to the vendor who produced the original machine. Unless an alternative producer of "plug-compatible" hardware exists then one is left to purchase "the genuine article". A Lan allows users to connect the PC of choice to the network. The only proviso is that the hardware and software be compatible with the Lan and other PCs on the network.

Making the connection

Connectivity is a word which has been used to refer more to mainframe interconnection than to microcomputers and Lans. It has been used as a weapon to break the nexus of proprietary communications protocols. This issue, due to the existence of international standards is not a problem with Lans. It does, however become a significant cause for concern when one seeks to interconnect a Lan to another machine or Lan. The "gateway" needs to be compatible with both systems. Interconnection of a multi-user system to another tends to be more difficult when the other party is "alien". This is obviated by systems vendors adopting a similar operating system (for example Unix).

Predominant among all these issues is cost. It is an area in which the other issues have a very complex interrelationship. In real terms the cost of installing a particular type of system — Lan or multi-user — must be measured against all the contributing factors.

These factors consist of time consumed by managers and users of the system, overheads consumed by system quirks or inadequacies, losses due to unreliability or simple failure and the time and expense required to educate a set of users to a productive state after the installation of a new system.

These costs vary greatly according to the type of system chosen. Some of these costs are "hidden", so much so that they are easily forgotten by the system manager, and "ignored" by the vendor proposing the new system. It is this issue which will be examined in detail at a later time.

● *Mitchell Duncan is managing director of Don, Cameron and Associates Pty Ltd, consulting electronics and communications engineers, Springwood NSW.*

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CORE REPORT

MODEMS

By Ranjana Sharma

Integrated Services Digital Network and digital transmission technologies are gradually replacing the analogue telephone network. However, modems will continue to be a necessary commodity. Users probably will continue to use modems for data transmission well into the next decade.

IN SPITE of the bandwidth limitations of the analogue network for digital transmission, modem vendors are successfully achieving ever-increasing transmission speeds through the use of advanced digital signal-processing techniques, such as trellis-coded modulation, adaptive equalisation and echo cancellation.

Most vendors are announcing high-speed V.32-based dialup modems as the latest entry in their repertoire of modem products. The CCITT V.32 recommendation is the internationally accepted standard for full-duplex, two-wire dialup transmission at 9.6K-bit/sec.

Since its introduction in 1984, the acceptance of V.32 has progressed slowly. Vendors initially found the technology too expensive to develop and instead introduced high-speed modems based on proprietary implementations. But as most industry watchers and experts agree, this trend will change.

Statistics from International Data Corp (IDC) show that annual unit shipments for 9.6K-bit/sec dialup modems increased by more than 180 per cent in 1987. Due to falling prices, total revenues increased at a lower rate of 112 per cent. IDC predicts an 85 per cent growth in unit shipments for 1988.

In the leased-line arena, modem transmission speeds are reaching the 19.2K-bit/sec mark. The highest speed standardised by the CCITT recommendations for four-wire leased-line transmission is currently V.33-based 14.4K-bit/sec. Modem speeds beyond the V.33 standard are achieved through proprietary designs. Because they address smaller niche markets, the market growth for high-speed leased-line modems has been relatively flat.

"The 14.4K-bit/sec modem market is suffering from competition with both 9.6K-bit/sec and 19.2K-bit/sec modems," said Rick Villars, senior data communications research analyst with IDC. "When users want speeds higher than 9.6K-bit/sec, they go all the way to 19.2K-bit/sec."

Dialup modem features

The two relevant standards for 9.6K-bit/sec transmission over two-wire lines are the CCITT V.29 recommendation for half-duplex, synchronous 9.6K-bit/sec transmission and the CCITT V.32 recommendation for full-duplex, synchronous 9.6K-bit/sec transmission.

In order to overcome the bandwidth restriction of a standard analogue telephone channel, both standards employ a signalling scheme called quadrature amplitude modulation (QAM). QAM is a modulation technique that uses multilevel signalling states represented by combinations of signal amplitude and phase. Groups of data bits are encoded as one signalling state. For example, V.29 uses 16 different signalling states, each of which is encoded with groups of four data bits. This results in a symbol (or baud) rate of 2,400 baud/sec for 9.6K-bit/sec transmission.

For forward error correction, the V.32 standard also offers trellis-coded modulation (TCM), which allows a modem to communicate reliably under noisier line conditions. With TCM, a fifth redundant bit is added to each group of four bits, thus requiring a denser, 32-state signalling constellation to represent five-bit groups. Performed by the transmitting modem, the redundancy added by trellis encoding helps the receiving modem's decoder identify the correct value of the received symbols. With noisy line conditions, the modem's bit error rate is improved.

For full-duplex transmission, V.32 uses a technique called echo cancellation to achieve the channel separation between the transmit and receive directions. Echo cancellation eliminates the interference to the received signal from line echoes of the transmitted signal. Caused by line junction points, echoes are reflections of the transmitted signal. Echo cancellation filters out these unwanted reflected signals so that they are not misinterpreted as the received signal.

Because of the design complexity in implementing V.32 standards, several vendors have chosen other, less expensive approaches to achieving 9.6K-bit/sec and faster speeds for dial-up applications. These designs generally fall into one of three classes: true V.32-compatible modems; modified V.29 or V.32 modems; and proprietary modulation techniques.

V.32 modems are the only modems that provide true full-duplex 9.6K-bit/sec transmission. Modified V.29 or V.32 modems only simulate full-duplex communications; the transmission is actually either asymmetrical or half-duplex. Asymmetrical transmission, also called statistical duplexing, allows for a high-speed 9.6K-bit/sec channel in one direction with a lower speed (typically 200 to 1200 bit/sec) channel in the reverse direction. Half-duplex transmission, also called ping-pong or pseudoduplex, provides for quick line turnaround whenever there is data to be transmitted at the remote modem.

A strict adherence to V.32 is necessary when a user is looking for multivendor product compatibility and is willing to pay the price. Also, the true full-duplex nature of V.32 will provide the fastest response time for bi-directional applications. For applications requiring mostly one-way file transfers, the pseudoduplex modems can provide an attractive low-cost alternative.

In order to address compatibility with a very large base of lower speed dialup products, most vendors are planning to offer fallback to full-duplex V.22bis and Bell 212A-based 2400 bit/sec and 1200 bit/sec modes of operation. V. 32 includes only a 9.6K-bit/sec primary rate with a 4.8K-bit/sec fallback rate. Chipsets with multitispeed modem support are now becoming available. These are likely to expand the dialup high-speed modem market.

Error control

Error control on a data connection has traditionally been implemented through higher level software protocols requiring the same software support at both ends of a connection. For synchronous leased-line applications, this function can be supported by protocols such as Synchronous Data Link Control and High-Level Data Link Control. For asynchronous dialup connections, software error control requires packages such as Xmodem and Kermit. Therefore, most dialup modem vendors include software-independent error control in their modems.

Until the recent agreement of the CCITT V.42 error control recommendations, no error control standards existed between two modems. Because of this lack of standards and the necessity for compatible operation, vendors adopted Microcom Network Protocol as a de facto standard, though several vendors also provide their own proprietary techniques.

Dialup modem vendors offer data compression to boost throughputs without resorting to the expensive development of higher speed modulation techniques. Data compression techniques remove redundancy in the data being sent by recoding characters, words and phrases that occur frequently. Thus 10-bit Ascii characters are recoded into fewer bits, and repeated character strings are coded as special control characters.

Advertised compression benefits are usually the maximum achievable and can vary substantially according to the type of data being transmitted. Data compression works most favorably on Ascii text files with repetitive character patterns. Like error control, data compression also requires compatible algorithms running at both ends. Again, Microcom has set the de facto industry standard for data compression.

Automatic control features

Dialup modems provide a high degree of intelligence, which allows virtually unattended operation of the dialup connection. Standard features include autodialling, auto-answering, automatic speed adjustment with a calling modem, command set compatibility, self-testing, multinumber storage and diagnostic and loop-back capabilities.

For asynchronous connections, the Hayes AT command set developed by Hayes Microcomputer Products, has become the de facto industry standard for software-programmed modem control. The AT command set is so called because it uses the AT prefix to differentiate the command characters from the data characters. Programmed command sets allow a personal computer-based software program to automatically tell a modem to dial and set asynchronous transmission parameters such as data bits per character, parity, stop bits and transmission speed. With command set compatibility, the same communications software packages can work with modems from different vendors.

Autodialling does not currently have a recognised standard with synchronous connections. Synchronous communications protocols, such as Binary Synchronous Communications, SDLC and HDLC, have traditionally been the domain of leased-line connections. The CCITT standard for autodialling is V.25bis, which standardises the command formats for asynchronous and synchronous dialling with both character-oriented and bit-oriented synchronous protocols.

V.25bis has been accepted by several vendors for implementing synchronous autodialling. But V.25bis does not provide a complete modem command set. Thus V.25bis implementations can be vendor-specific. Leading contenders for a de facto standard are Racal-Vadic's Synchronous Auto-Dialling Language and Universal Data System's (UDS) Sync-up protocol for synchronous modem control and auto-dialling.

To support synchronous communications, some vendors supply additional dialling modes, such as data terminal ready (DTR) controlled dialling and front-panel dialling. With DTR-controlled dialling, the modem automatically dials a prestored number when the data terminal equipment raises the DTR modem signal. Front-panel dialling allows an operator to manually dial a stored number from the modem's front-panel buttons.

Leased-line modem features

Most dialup modems also support point-to-point leased-line operation. End-to-end leased lines present a more controlled operating environment for the modem, whereas with a dialup connection, performance varies with each new call.

High-speed diagnostic modems address the needs of private networks in which multivendor compatibility is not an important issue.

This allows vendors to incorporate a proprietary secondary channel for exchange of net control and management messages plus functions that monitor line quality and that are not feasible with dialup modems.

Vendors offer a variety of leased-line products ranging in application from point-to-point connections to sophisticated multidrop, multipoint multiplexer support. Multidrop modems allow various devices at different locations to share the same leased-line. For multidrop applications, modems also provide proprietary fast-polling techniques that can substantially shorten the V.29 standard-based 250ms training sequence.

The higher end leased-line modems also provide data concentration functions through inbuilt multiplexers.

● *Ranjana Sharma is president of Telesyne, a telecommunications and network design company.*

AUSTRALIAN MODEM MARKET

Forecast shipments

	ANNUAL SHIPMENTS	
	Value ($M)	Units
1986	70.0	109,250
1987	74.7	124,500
1988	79.5	142,000
1989	84.2	162,000
1990	88.6	184,500

SOURCE: IDC

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[redacted]

Product Model/Manufacturer	Speed (bits per second)	Asynchronous/synchronous	Transmission Compatibility	Full/Half Duplex	Auto Answer	Auto disconnect	Auto Dial	Auto Ranging	Error Correction	Self-test	Remote Diagnostics	Analogue/Digital Loopback	Help cues	Software included	Inbuilt memory (No. of char.)	Internal/External	Power Supply Cable	Documentation	Warranty	Price ($A inc tax)
ABE Computers Pty Ltd — 24 Burwood Highway, Burwood, Vic 3125.																				**Tel: (03) 288 2144**
Maxwell-5	300/300, 1200/75, 75/1200, 1200/1200, 2400/2400	AS	V.21, V.22, V.23, V.22 bis, Bell 103, 113, 202, 212A	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	I/E	PS	✓	✓	$450
Advanced Components Pty Ltd — Unit 6, Cnr Maroondah Hwy & Killara Rd, Coldstream, Vic 3770.																				**Tel: (03) 739 1198**
HM-3120A/C/P (Pocket size)	1200, 2400	—	V.32, V.22, V.21, Bell 103, 212A	F	✓	✓	✓	✓	✓	—	✓	—	—	Opt	—	E	Opt	✓	✓	PoA
HM-3240E, HM-550	1200, 2400	—	V.22 bis, V.22, Bell 103, 212A	F	—	—	—	—	—	—	✓	—	—	Opt	—	E	Opt	✓	✓	PoA
J N Almgren Pty Ltd — 16 Smith St, Chatswood, NSW 2067.																				**Tel: (02) 406 6177**
Codex 2265	9600-4800	AS	V.32	F	✓	✓	✓	✓	TCM	✓	✓	AD	✓	—	—	E	✓	✓	✓	PoA
Codex 2325	4800, 2400	AS	V.27 bis, V.29	F	—	—	—	—	—	✓	✓	A/D	—	—	—	E	✓	✓	✓	PoA
Codex 2345	9600, 7200, 4800	AS	V.27 bis, V.29	F	—	—	—	—	—	✓	✓	A/D	—	—	—	E	✓	✓	✓	PoA
Codex 2366	To 14,400	S	V.29, V.33	F	—	—	—	—	—	✓	✓	A/D	—	—	—	E	✓	✓	✓	PoA
Codex 2625	4800-1200	AS	V.27 bis	F	—	—	—	—	—	✓	✓	A/D	NCO	—	—	E	✓	✓	✓	PoA
Codex 2645	9600-1200	AS	V.29	F	—	—	—	—	—	✓	✓	A/D	NCO	—	—	E	✓	✓	✓	PoA
Codex 2665	16800, 14400, 9600	AS	V.29	F	—	—	—	✓	TCM	✓	✓	AD	NCO	—	—	E	✓	✓	✓	PoA
Codex 2666	16800, 14400, 9600	AS	V.29, V.33	F	—	—	—	✓	TCM	✓	✓	A/D	NCO	—	—	E	✓	✓	✓	PoA
Codex 2683	19200-1200	AS	V.24, V.28	F	—	—	—	—	TCM	✓	✓	AD	—	—	—	E	✓	✓	✓	PoA
Codex 2685	19200-1200	AS	Adaptive rate	F	—	—	—	✓	TCM	✓	✓	AD	NCO	—	—	E	✓	✓	✓	PoA
AX1400	2400/1200/1200/75, 300	AS	V.22 bis, V.23, V.22, V.21, Bell 103,212	F	✓	✓	✓	✓	✓	✓	✓	AD	—	—	—	E	✓	✓	✓	$1300
AS472A	2400/1200	AS	V.22 bis, V.22, Bell 212	F	✓	✓	✓	✓	—	✓	✓	AD	—	—	—	E	✓	✓	✓	$1100
AS472	2400/1200	AS	V.22 bis, V.22, Bell 212	F	✓	✓	—	✓	—	✓	✓	AD	—	—	—	E	✓	✓	✓	$1000
AS471	1200,1200/75, 300	A	V.21, V.23	F	✓	✓	—	—	—	✓	—	AD	—	—	—	E	✓	✓	✓	$700
AS470	1200/75, 300	A	V.21, V.22	F	✓	✓	✓	—	—	✓	—	AD	—	—	—	E	✓	✓	✓	$630
AX440	19200	AS	V.28, V.24	F	—	—	—	—	—	✓	✓	AD	—	—	—	E	✓	✓	✓	$593
AX442	48000-72000	AS	V.35	F	—	—	—	—	—	✓	✓	AD	—	—	—	E	✓	✓	✓	$875
AX450	19200,1200	AS	V.24, V.25	F	—	—	—	—	—	✓	✓	AD	—	—	—	E	✓	✓	✓	$1860
AX445	1200,19200	AS	V.24, V.28	F	—	—	—	—	—	✓	✓	AD	—	—	—	E	✓	✓	✓	PoA
AX460	1200, 19200	AS	V.24, V.28	F	—	—	—	—	—	✓	✓	AD	—	—	—	E	✓	✓	✓	PoA
Avtek Pty Ltd — Block B, 25 Paul St North, North Ryde, NSW 2113																				**Tel: (02) 888 5533**
Avtek Megamodem 12	300/300, 1200/1200	A	V.21, V.22, Bell 103, 212A	✓	✓	✓	✓	★	—	✓	—	✓	—	—	40	E	✓	✓	✓	PoA
Avtek PC Megamodem 12	300/300, 1200/1200	A	V.21, V.22, Bell 103, 212A	✓	✓	✓	✓	★	—	✓	—	✓	—	—	40	i	✓	✓	✓	PoA
Avtek Megamodem 123	300/300, 1200/1200, 1200/75	A	V.21, V.22, V.23, Bell 103, 212A	✓	✓	✓	✓	★	—	✓	—	✓	—	—	40	E	✓	✓	✓	PoA
Avtek PC Megamodem 123	300/300, 1200/1200, 1200/75	A	V.21, V.22, V.23, Bell 103, 202A	✓	✓	✓	✓	★	—	✓	—	✓	—	—	40	I	✓	✓	✓	PoA
Avtek Megamodem 1234	300/300, 1200/1200, 1200/75, 2400/2400	A	V.21, V.22, V.23, V.22 bis, Bell 103, 212A	✓	✓	✓	✓	★	—	✓	—	✓	—	—	40	E	✓	✓	✓	PoA
Avtek PC Megamodem 1234	300/300, 1200/1200, 1200/75, 2400/2400	A	V.21, V.22, V.23, V.22 bis, Bell 103, 212A	✓	✓	✓	✓	★	—	✓	—	✓	—	—	40	I	✓	✓	✓	PoA
Avtek Minimodem II	300/300, 1200/75	A	V.21, V.23	✓	—	—	—	—	—	—	—	—	—	—	24	E	PS, C	✓	✓	PoA
Case Communication Systems Ltd — 10-12 Rodborough Rd, Frenchs Forest, NSW 2086.																				**Tel: (02) 451 6655**
Case SB2422 Quattro/Dowty UK	300-2400	AS	V.21, V.23, V.22, V.22 bis, Bell 103, 212A	F	✓	✓	✓	✓	✓	✓	✓	AD	✓	✓	2K	I/E	PS(C)	✓	✓	$1145
Case 1222/Sendata	1200	AS	V.22	F	✓	✓	—	—	—	—	—	—	—	—	—	I/E	PS(C)	✓	✓	$454
Case 2426/Dowty UK	2400	S	V.26	H	Opt	Opt	Opt	—	—	—	—	—	—	—	—	I/E	PS(C)	✓	✓	$1219
Case 4827/Dowty UK	2400/4800	AS	V.27	F	—	—	—	✓	—	✓	✓	AD	—	—	—	I/E	PS(C)	✓	✓	$2128
Case 9629/Dowty UK	24/48/72/9600	AS	V.27, V.29	F	—	—	—	✓	—	✓	✓	AD	—	—	—	I/E	PS(C)	✓	✓	$2243
Case 2424 ADH/CTS US	To 2400	AS	V.22, V22 bis, Bell 103, 113, 212A	F	✓	✓	✓	✓	Opt	✓	✓	AD	✓	—	—	I/E	PS(C)	✓	✓	$595
Data Bridge Electronic Communications Pty Ltd — 604 North Rd, Ormond, Vic 3204.																				**Tel: (03) 578 0814**
Cermetek CSP9600	9600, 4800	AS	V.32	F	✓	✓	✓	✓	Opt	✓	✓	✓	✓	✓	10 auto dial nos.	E	✓	✓	✓	$4748
Cermetek 9600DA	9600, 4800	A	V.32	F	✓	✓	✓	✓	Opt	✓	✓	✓	✓	✓	10 auto dial nos.	E	✓	✓	✓	$3650
DSP-1200	1200	AS	V.22, Bell 212, V.25 bis opt.	F	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	512	E	✓	✓	✓	$863
DSP-2400	1200/2400	AS	V.22 bis, Bell 212, V.25 bis opt.	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	512	E	✓	✓	✓	$895
DSP-123	1200, 1200/75, 300	AS	V.22, V.23, V.21, Bell 212, 103, V.25 bis opt.	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	512	E	✓	✓	✓	$935
DSP-1234	2400, 1200, 1200/75, 300	AS	V.22, V.22 bis, V.23, V.21, Bell 212, 103, V.25 bis opt.	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	512	E	✓	✓	✓	$995
Datacraft (Australia) Pty Ltd — Maroondah Hwy, Croydon, Vic 3136.																				**Tel: (03) 727 9111**
Datacraft Procraft	4800, 9600	AS	V.32	F	✓	✓	✓	✓	✓	✓	✓	AD	✓	—	2000	E	✓	✓	✓	$4375
Datacraft Packetlink 571	2400	AS	X.25/X.32 (V.22 bis)	F	✓	✓	✓	—	—	✓	✓	AD	—	—	—	I	✓	✓	✓	$1295
Datacraft Quadcraft	300, 1200/75, 1200, 2400	AS	V.21, V.22, V.23, V.22 bis, Bell 103	F	✓	✓	✓	✓	✓	✓	✓	AD	✓	—	2000	E	✓	✓	✓	$895
Datacraft Speedcraft	300, 1200/75, 1200, 2400, 4800	AS	V.21, V.22, V.23, V.22 bis, Bell 103	F	✓	✓	✓	✓	✓	✓	✓	AD	✓	—	2000	E	✓	✓	✓	$1199
Datacraft Mailcraft	300, 1200/75, 1200 HD	AS	V.21, V.23, Bell 103, 202	300 only	✓	✓	—	—	—	✓	—	—	—	—	—	E	✓	✓	✓	$488
Datacraft Infocraft	300, 1200	AS	V.21, V.22, Bell 103, 212A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	—	2000	E	✓	✓	✓	$695
Dataplex Pty Ltd — 28 John Street, Lilydale, Vic 3140.																				**Tel: (03) 735 3333**
DPX-224	300, 275, 1200, 2400, Quad	AS	V.21, V.23, V.22, V.22 bis, Bell 103, 202, 212A	F	✓	✓	✓	✓	✓	✓	✓	AD	✓	Opt	512	I/E	✓	✓	✓	$1163(Ext) $850(Int)
Datasat Information Systems Pty Ltd, Suite 3&4, 67 Scott St, Liverpool, NSW 2170.																				**Tel: (02) 821 1622**
Allegro 2400 Compact Modem/Datasat	2400/1200/300	AS	V.21, V.22, V.22 bis, Bell 103, 212A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	Opt	128-Novram	E	✓	✓	✓	$459
Vtex Autodial Compact Modem/Datasat	300/1257	A	V.21, V.23	F	—	✓	✓	✓	—	—	—	—	✓	Opt	—	E	✓	✓	✓	$359
Vtex Auto Dial Internal Modem/Datasat	300/1257	A	V.21, V.23	F	—	✓	✓	✓	—	—	—	—	✓	Opt	—	I	✓	✓	✓	$259
GEC Plessey Telecommunications (Australia) Pty Ltd, 5-7 Slough Ave, Silverwater, NSW 2141.																				**Tel: (02) 741 9666**
DM 2422A/GEC Plessey	1200/2400	S	V.22, V.22 bis	F	—	—	—	—	—	✓	—	AD	—	—	—	—	✓	✓	✓	$395
DM 2422B/GEC Plessey	1200/2400	S	V.22, v 22 bis	F	—	—	—	—	—	✓	—	AD	—	—	—	—	✓	✓	✓	$395
D 9632/GEC Plessey	4800/9600	AS	V.32, V.25, V.25 bis	F	✓	✓	✓	—	—	✓	—	AD	✓	—	—	—	✓	✓	✓	$1795
GFS Electronics, 17 McKeon Rd, Mitcham, Vic 3132.																				**Tel: (03) 873 3777**
Data Radio Technology Model CPU-100 and Model CPU-50	Radio Modems	—	Link baud rate 1200 bps, DTE baud rate to 9600 bps	✓	—	—	—	—	✓	—	—	—	—	—	1.8k	E	PS	✓	✓	CPU-100 $2394, CPU-50 $1198.80
Industrial Micro Products — 1 Brewer St, East Perth, WA 6000																				**Tel: (09) 227 9455**
Caspa Asynchronous to Synchronous Converter	300-38.4K	S	—	F	—	—	—	—	—	—	—	—	—	—	—	—	✓	✓	✓	$413
Interlink Electronics — 113 Fitzroy St, St Kilda, Vic 3182.																				**Tel: (03) 525 3388**
Internlink M-3+12/75	300, 1200/75	A	V.21, V.23, Bell 103	F	—	—	—	—	—	—	—	—	—	Viatel	—	E	✓	✓	✓	$329
Internlink IQ-3+12/75	300, 1200/75	A	V.21, V.23, Bell 103,	F	✓	✓	✓	✓	—	—	—	—	—	Viatel	—	E	✓	✓	✓	$399
Internlink IQ-123	1200, 1200/75, 300	A	V.21, V.22, V.23, Bell 103, 212	F	✓	✓	✓	✓	—	—	—	—	—	Viatel	—	E	✓	✓	✓	$495
Interlink IQ-1234	75, 1200, 300, 1200/75, 1200, 2400	A	V.21, V.22, V 22 bis, V.23, Bell 103, 212	F	✓	✓	✓	✓	—	✓	✓	AD	—	Viatel	32k	E	✓	✓	✓	$795
Interlink IQ-34A	2400, 1200	A	CCITT Bell	F	✓	✓	✓	✓	—	✓	✓	AD	—	IBM Comm	40 char	E	✓	✓	✓	$495
Mike Boorne Electronics Pty Ltd — 6A Hill St, Roseville, NSW 2069																				**Tel: (02) 46 3014**
Bit Blitzer 12/E, 12/I Banksia Information Technology Ltd	300, 1200	S	V. 21, V.22, Bell 103, 212A	F	✓	✓	✓	✓	—	✓	✓	—	—	—	✓	E	✓	✓	✓	$399
Bit Blitzer 123E/ 1234/E Banksia Information Technology Ltd	300, 1200, 1200/75, 2400 (1234E only)	AS	V.21, V.22, V.23, Bell 103, 212A	F	✓	✓	✓	✓	—	—	—	—	—	Viatel	—	E	✓	✓	✓	$499

✓ heading applies; — heading not applicable, or information not supplied; opt/( ) optional; upg upgradable to; AS Asynchronous/Synchronous; F,H Full/Half Duplex; ADX Adaptive duplex; AD Analogue/Digital loopback; E,I,R External/Internal/Rackmount; PS Power supply; C Cable; CP Computer powered; Prop Proprietary algorithm; SC III Super Com III; SC Super Com; TCM Trellis coded modulation; NCO Network Control Option; P.O.A. Price on Application. ★ originate only;

† The information listed for these companies was current at January 1988. They were unable to provide updated information by the stipulated deadline

It is likely that price and/or products changes will have taken place, so details will especially need to be confirmed with the respective suppliers.

CORE REPORT

Product Model/Manufacturer	Speed (bits per second)	Asynchronous/synchronous	Transmission Compatibility	Full/Half Duplex	Auto Answer	Auto disconnect	Auto Dial	Auto Ranging	Error Correction	Self-test	Remote Diagnostics	Analogue/Digital Loopback	Help cues	Software included	Inbuilt memory (No. of char.)	Internal/External	Power Supply Cable	Documentation	Warranty	Price ($A inc tax)
Netcomm (Australia) Pty Ltd — Unit B, 25 Paul St North, North Ryde, NSW 2113. †																				**Tel: (02) 888 5533**
Modem 64/128	300/300, 1200/75	A	V.21, V.23	F	✓	✓	✓	✓	—	—	—	—	✓	✓	—	E	✓	✓	✓	$341
Modem 3+12A	300/300, 1200/75	A	V.21, V.23, Bell 103	F	—	—	—	—	—	✓	—	A	✓	✓	—	E	✓	✓	✓	$341
Modem 3+12NCP	300/300, 1200/75	A	V.21, V.23, Bell 103	F	—	—	—	—	—	✓	—	A	✓	✓	—	E	✓	✓	✓	$341
Automodem 21/23	300/300, 1200/75, 75/1200	A	V.21, V.23, Bell 103	F	✓	✓	✓	—	—	✓	✓	AD	✓	Opt	8.3K	E	✓	✓	✓	$549
Automodem 12/12	300/300 (Bell only), 1200/1200, 1200/75	A	V.22, Bell 103, 212A	F	✓	✓	✓	—	—	✓	✓	AD	✓	Opt	8.3K	E	✓	✓	✓	$699
Automodem 24/24	300/300, (Bell only), 1200/1200, 2400/2400	A	V.22, V.22 bis, Bell 103, 212A	F	✓	✓	✓	—	—	✓	✓	AD	✓	Opt	8.3K	E	✓	✓	✓	$999
Automodem 123	300/300, 1200/75, 75/1200, 1200/1200	A	V.21, V.23, V.22, Bell 103, 212A	F	✓	✓	✓	—	—	✓	✓	AD	✓	Opt	8.3K	E	✓	✓	✓	$925
Automodem 1234	300/300, 1200/75, 75/1200, 1200/1200, 2400/2400	A	V.21, V.23, V.22, V.22 bis, Bell 103, 212A	F	✓	✓	✓	—	—	✓	✓	AD	✓	Opt	8.3K	E	✓	✓	✓	$1125
Smartmodem 21/23SA	300/300, 1200/75, 75/1200, 1200 HDX	AS	V.21, V.23, Bell 103	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	3.8K	E	✓	✓	✓	$675
Smartmodem 1200SA	300/300, (Bell only), 1200/1200 2400 upg)	AS	V.22, V.22 bis, UPS Bell 103/212A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	3.8K	E	✓	✓	✓	$895
Smartmodem 2400SA	300/300 (Bell only) 1200/1200, 2400/2400	AS	V.22, V22 bis, Bell 103, 212A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	3.8K	E	✓	✓	✓	$1195
Smartmodem 123SA	300/300, 1200/75, 75/1200, 1200 HDX, 1200/1200 2400 upg)	AS	V.21, V.22, V.23 22 bis upg, Bell 103/212A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	3.8K	E	✓	✓	✓	$1199
Smartmodem 1234SA	300/300, 1200/75, 75/1200, 1200 HDX, 1200/1200, 2400/2400	AS	V.21, V.23, V.22, V.22, bis, Bell 103/212A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	3.8K	E	✓	✓	✓	$1499
Datalock 123SA	300/300, 1200/75, 75/1200, 1200 HDX, 1200/1200, 2400 upg	AS	V.21, V.23, V.22 V.22 bis upg, Bell 103, 212A	F	✓	✓	✓	✓	✓	✓	✓	AD	✓	✓	42K	E	✓	✓	✓	$1499
Datalock 1234SA	300/300, 1200/75, 75/1200, 1200 HDX, 1200/1200, 2400/2400	AS	V.21, V.23, V.22 V.22 bis, Bell 103, 212A	F	✓	✓	✓	✓	✓	✓	✓	AD	✓	✓	42K	E	✓	✓	✓	$1799
PC In/Modem	300/300, 1200/75, 75/1200,	A	V.21, V.23, Bell 103	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	1.9K	I	✓	✓	✓	$569
In/Modem 1200	300/300 (Bell only), 1200/1200 (2400)	A	V.22, V.22 Upg, Bell 103, 212A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	3.8K	I	✓	✓	✓	$699
In/Modem 2400	300/300 (Bell only), 1200/1200, 2400/2400	A	V.22, V.22 bis, Bell 103, 212A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	3.8K	I	✓	✓	✓	$999
In/Modem 123	300/300, 1200/75, 75/1200, 1200/1200 (2400)	A	V.21, V.23, V.22 V.22 bis upg, Bell 103, 212A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	3.8K	I	✓	✓	✓	$925
In/Modem 1234	300/300, 1200/75, 75/1200, 1200/1200 2400/2400	A	V.21, V.23, V.22, V.22 bis, Bell 103, 212A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	3.8K	I	✓	✓	✓	$1225
Smartmodem 9648FT	2400, 4800, 7200, 9600	S	V.27, V.29	H	✓	✓	✓	—	—	✓	✓	AD	✓	✓	34K	E	✓	✓	✓	$3300
Smartmodem 9648DP	2400, 4800, 7200, 9600	S	V.27, V.29	H	✓	✓	✓	—	—	✓	✓	AD	✓	✓	34K	E	✓	✓	✓	$2252
Smartmodem 9648HD	2400, 4800, 7200, 9600	S	V.27, V.29	H	✓	✓	✓	—	—	✓	—	A	✓	✓	34K	E	✓	✓	✓	$1933
Trailblazer	1200/1200, 2400/2400, 18,000 ADX	A	V.22, V.22 bis, Bell 212A	ADX, F	✓	✓	✓	✓	✓	✓	✓	—	✓	Opt	132K	E	✓	✓	✓	$3468
Trailblazer PC	1200/1200, 2400/2400, 18,000 ADX	A	V.22, V.22 bis, Bell 212A	ADX, F	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	132K	I	✓	✓	✓	$3242
Netcomm Pocket Commodore 64/128	300, 1200/75, 1200	A	V.21, V.22, V.23, Bell 103, 212A	F	✓	✓	✓	—	—	✓	✓	AD	✓	—	4.2K	E	CP	✓	✓	$499
Netcomm Pocket Modem Premium	300, 1200/75, 1200	A	V.21, V.22, V.23, Bell 103, 212A	F	✓	✓	✓	—	—	✓	✓	AD	✓	✓	4.2K	E	✓	✓	✓	$675
Netcomm Pocket Modem Amiga	300, 1200/75, 1200	A	V.21, V.22, V.23, Bell 103, 212A	F	✓	✓	✓	—	—	✓	✓	AD	✓	—	4.2K	E	CP	✓	✓	$499
The Nice Computer Company of Australia Pty Ltd, 112/396 Scarborough Beach Road, Osborne Park, WA 6017.																				**Tel: (09) 242 2422**
First Nice Modem	300, 1200/75	A	V.21, V.23, Bell 103, 202	F	—	—	—	—	—	—	—	—	—	—	—	E	✓	✓	✓	$279
Nice Inside One	300, 1200/75	A	V.21, V.23, Bell 103,	F	✓	✓	✓	✓	—	—	✓	AD	—	Opt	40	I	✓	✓	✓	$519
Nice Inside Two	300, 1200/75, 1200	A	V.21, V.22, V.23, Bell 103, 212	F	✓	✓	✓	✓	—	—	✓	AD	—	Opt	40	I	✓	✓	✓	$769
Nice Modem Two	300, 1200/75, 1200	A	V.21, V.22, V.23, Bell 103, 212A	F	✓	✓	✓	✓	—	—	✓	AD	✓	—	2000	E	✓	✓	✓	$749
Nice Modem Three	300, 1200/75	A	V.21, V.23, Bell 103,	F	✓	✓	✓	✓	—	—	✓	AD	✓	—	2000	E	✓	✓	✓	$549
Nice Modem Four	300, 1200/75, 1200, 2400	A	V.21, V.22, V.22 bis, V.23, Bell 103, 212A	F	✓	✓	✓	✓	—	—	✓	AD	✓	—	2000	E	✓	✓	✓	$1099
Nice Modem Four/E	300, 1200/75, 1200, 2400	A	V.21, V.22, V.22 bis, V.23, Bell 103, 212A	F	✓	✓	✓	✓	✓	—	✓	AD	✓	—	2000	E	✓	✓	✓	$1198
Direct Line Series THB-2	300, 1200/75, 1200	A	V.21, V.22, V.23, Bell 103, 212A	F	✓	✓	✓	✓	—	—	✓	AD	¢	—	40	E	✓	✓	✓	$655
Direct Line Series THB-4	300, 1200/75, 1200, 2400	A	V.21, V.22, V.22 bis, V.23, Bell 103, 212A	F	✓	✓	✓	✓	—	—	✓	AD	—	—	40	E	✓	✓	✓	$844
Pulsar Electronics, Catalina Drive, Tullamarine, Vic 3043.																				**Tel: (03) 330 2555**
Sam	300/300, 1200/1200, 1200/75	A	V.21, V.22, V.23	F	✓	✓	✓	✓	—	✓	✓	—	✓	✓	32K	E	✓	✓	✓	$540
Rosser Communications — Suite 4, 1051 Pacific Hwy, Pymble, NSW 2073.																				**Tel: (02) 449 8233**
Trailblazer	18031, 2400, 1200, 300	A	V.22 bis, V.22, Bell 103A, 212A	F	✓	✓	✓	✓	✓	✓	✓	—	✓	—	250+	E	PS	✓	✓	$3468
DPX-224	2400, 1200, 120075, 300	AS	V.22 bis, B.22, V.23, V.21, Bell 103A, 212A	F	✓	✓	✓	✓	✓	✓	✓	AD	✓	—	200	E	PS	✓	✓	$1339
Quad Security	2400, 1200, 1200/75,300	AS	V.22 bis, V.22, V.23, V.21, Bell 103A, 212A	F	✓	✓	✓	✓	✓	✓	✓	AD	✓	✓	200	E	PS	✓	✓	$1799
Q1234 In/Modem	2400, 1200, 1200/75,300	A	V.22 bis, V.22, V.23, V.21, Bell 103A, 212A	F	✓	✓	✓	✓	—	—	—	—	✓	✓	—	I	—	✓	✓	$1123
DSP 2400	2400, 1200	AS	V.22 bis, V.22, V.23, V.21, Bell 103A, 212A	F	✓	✓	✓	✓	—	—	—	AD	✓	—	—	E	PS	✓	✓	$995
Automodem 24/24	2400, 1200	A	V.22 bis, V.22, Bell 212A	F	✓	✓	✓	✓	—	—	—	—	✓	—	—	E	PS	✓	✓	$962
Inside 123	1200, 1200/75, 300	AS	V.22, V.23, V.21	F	✓	✓	✓	✓	—	—	—	—	✓	✓	—	E	—	✓	✓	$849
123 AT	1200, 1200/75, 300	AS	V.22, V.23, V.21	F	✓	✓	✓	✓	—	—	—	A	✓	—	—	E	—	✓	✓	$650
Bit Blitzer	1200, 300	A	V.22, V.21, Bell 212A, 103A	F	✓	—	✓	✓	—	✓	—	—	✓	—	—	E	—	✓	✓	$399
Auto 21/23	1200/75,300	A	V.23, V.21, Bell 103A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	—	E	—	✓	✓	$530
Le Modem	1200/75,300	A	V.23, V.21, Bell 103A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	—	I	—	✓	✓	$498
Schmidt Electronic Laboratories Pty Ltd — 142 Chapel St, St Kilda, Vic 3183																				**Tel: (03) 531 8011**
Schmidt Model 123AT	300/300, 1200/75, 75/1200, 1200 HDX, 1200/1200, upg to 2400/2400	AS	V.21, V.23, V.22, V.22 bis upg, Bell 212A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	64	E	PS (C)	✓	✓	$549
Schmidt Model 1234AT	300/300, 1200/75, 75/1200, 1200 HDX, 1200/1200, 2400 upg	AS	V.21, V.23, V.22, V.22 bis, Bell 212A	F	✓	✓	✓	✓	—	✓	✓	AD	✓	✓	64	E	PS (C)	✓	✓	$699
Scitec Communication Systems Ltd — 3 Apollo Place, Lane Cove, NSW 2066.																				**Tel: (02) 428 9555**
Business 2123	1200/75	—	V.21, V.23, Bell 103	F	✓	✓	✓	✓	—	✓	✓	—	—	—	—	E	✓	✓	✓	PoA
Business 2200	1200	AS	V.22, Bell 212A	F	✓	✓	✓	✓	—	✓	✓	✓	—	—	✓	E	✓	✓	✓	PoA
Business 2400	2400	AS	V.22 bis, Bell 212A	F	✓	✓	✓	✓	—	✓	✓	✓	—	—	—	E	✓	✓	✓	PoA
Business Olympic	2400	AS	V.21, V.22, V.22 bis, V.23 Bell 103, 212A	F	✓	✓	✓	✓	— —	✓	✓	✓	—	—	—	E	✓	✓	✓	PoA
Business 2600	2400	S	V.26, Bell 201B/C	—	✓	—	✓	✓	—	✓	—	—	—	—	✓	E	✓	✓	✓	PoA
Mux 25 SM	9600	AS	V.22 bis	F	✓	✓	✓	✓	✓	✓	✓	✓	—	—	✓	E	✓	✓	✓	PoA
Sendata Communications Pty Ltd — Suite 31, 74 Pitt Street, Sydney 2000. †																				**Tel: (02) 223 4088**
321AA/Sendata	300, 1200, 75/1200,	AS	V.21, V.22, V.23, Bell 103, 202, 212A	F	✓	✓	—	✓	—	—	—	—	—	SC III	—	E	✓	✓	✓	PoA
321AD/Sendata	300, 1200, 75/1200,	AS	V.21, V.22, V.23, Bell 103, 303, 212A	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	SC III	28K	E	✓	✓	✓	PoA
321AD INT ½ Card/Sendata	300, 1200, 75/1200	AS	V.21, V.22, V.23, Bell 103, 202, 212A	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	SC III	28K	I	✓	✓	✓	PoA
V21ADS/Sendata	300, 1200, 75/1200	AS	V.21, V.22, V.23, Bell 103, 202, 212A	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	SC III	—	E	—	✓	✓	PoA

✓ heading applies; — heading not applicable, or information not supplied; opt/( ) optional; upg upgradable to; AS Asynchronous/Synchronous; F,H Full/Half Duplex; ADX Adaptive duplex; AD Analogue/Digital loopback; E,I,R External/Internal/Rackmount; PS Power supply; C Cable; CP Computer powered; Prop Proprietary algorithm; SC III Super Com III; SC Super Com; TCM Trellis coded modulation; NCO Network Control Option; P.O.A. Price on Application. ★ originate only;

† The information listed for these companies was current at January 1988. They were unable to provide updated information by the stipulated deadline.
It is likely that price and/or products changes will have taken place, so details will especially need to be confirmed with the respective suppliers.

CORE REPORT

Product Model/Manufacturer	Speed (bits per second)	Asynchronous/synchronous	Transmission Compatibility	Full/Half Duplex	Auto Answer	Auto disconnect	Auto Dial	Auto Ranging	Error Correction	Self-test	Remote Diagnostics	Analogue/Digital Loopback	Help cues	Software included	Inbuilt memory (No. of char.)	Internal/External	Power Supply Cable	Documentation	Warranty	Price ($A inc tax)
Sendata Communications Pty Ltd — Suite 31, 74 Pitt Street, Sydney 2000.																				**Tel: (02) 223 4088**
4321 ADS/Sendata	300, 1200, 75/1200, 2400	AS	V.21, V.22, V.22 bis, V.23, Bell 103, 202	F	✓	✓	✓	✓	—	✓	✓	✓	—	—	—	E	—	✓	✓	PoA
4321 AD INT ½ Card	300, 1200, 75/1200, 2400	AS	V.21, V.22, V.22 bis, V.23, Bell 103, 202, 212A, 24	F	✓	✓	✓	✓	—	✓	✓	✓	—	SC III	28K	I	✓	✓	✓	PoA
Quad Security Int/Sendata	300, 1200, 75/1200, 1200/75, 2400	AS	V.21, V.22, V.22 bis, V.23, Bell 103, 202, 212A, 24	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	SC III	4K	I	✓	✓	✓	PoA
Quad Security Modem/Sendata	300, 1200, 75/1200, 1200/75, 2400	AS	V.21, V.22, V.22 bis, V.23, Bell 103, 202	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	SC III	28K	E	✓	✓	✓	PoA
Sendata V.22 Bis AD	1200, 2400	AS	V.22,V.22 bis, Bell 212A, 24	F	✓	✓	✓	✓	✓	✓	✓	✓	—	SC III	—	E	✓	✓	✓	PoA
Sendata 4321AD	300, 1200, 75/1200, 1200/75, 2400	AS	V.21, V.22, V.22 bis, V.23, Bell 103, 202, 212A, 24	F	✓	✓	✓	✓	✓	✓	✓	✓	—	SC III	28K	E	✓	✓	✓	PoA
Sendata 2927	2400, 4800, 9600	AS	V.22 bis, V.27, V.29	F	✓	✓	—	—	—	✓	✓	✓	—	—	—	E	✓	✓	✓	PoA
Sendata 1275 INT	300, 75/1200	A	V.21, V.23, Bell 103, 202	F	✓	✓	✓	✓	—	—	—	—	—	SC III	—	I	✓	✓	✓	PoA
Sendata Toshiba INT Modem	300, 1200, 75/1200, 2400	A	V.21, V.22, V.22 bis, V.23, Bell 103, 202, 212A	F	✓	✓	✓	—	—	—	—	—	—	SC III	—	I	✓	✓	✓	PoA
Sendata Guard/Sendata	1200, 2400	AS	V.22, V.22 bis	F	—	—	✓	—	—	—	—	—	—	—	8K	E	✓	✓	✓	PoA
Sendatamux/Sendata	2400, 4800, 9600	S	V.22 bis, V.27, V.29	F	—	—	—	—	—	✓	✓	✓	—	—	—	E	✓	✓	✓	PoA
2000 RKMT/Sendata	300, 75/1200, 1200/75, 1200HD	AS	V.21, V.23, Bell 103, 202	F	✓	✓	—	✓	—	—	—	—	—	—	—	IR	Opt	✓	✓	PoA
V.22 RKMT/Sendata	1200	AS	V.22, Bell 212A	F	✓	✓	—	—	—	—	—	—	—	—	—	IR	Opt	✓	✓	PoA
V.11 Bis RKMT/Sendata	1200, 2400	AS	V.22, V.22 bis, Bell 212A, 24	F	✓	✓	✓	✓	✓	✓	✓	✓	—	—	—	IR	Opt	✓	✓	PoA
Quad Security RKMT/Sendata	300, 1200, 75/1200, 1200/75, 2400	AS	V.21, V.22, V.22 bis, V.23, Bell 103, 202, 212A, 24	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	8K	IR	Opt	✓	✓	PoA
Macro Modem 3 Speed/Sendata	300, 1200, 75/1200	AS	V.21, V.22, V.23, Bell 103, 202, 212A	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	SC III	✓	E	✓	✓	✓	PoA
Macro Modem 4 Speed	300, 1209, 75/1200, 2400	AS	V.21, V.22, V.22 bis, V.23, Bell 103, 202, 212A, 24	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	SC III	✓	E	✓	✓	✓	PoA
300M/Sendata	300	A	V.21, Bell 103	F	—	—	—	—	—	—	—	—	—	—	—	E	✓	✓	✓	PoA
700M Acoustic Coupler/Sendata	300, 75/1200, 1200/75, 1200HD	A	V.21, V.23, Bell 103, 202	F	—	—	—	—	—	✓	✓	✓	—	—	—	E	✓	✓	✓	PoA
300AA/Sendata	300	A	V.21, Bell 103,	F	✓	✓	—	—	—	—	—	—	—	—	—	E	✓	✓	✓	PoA
1275/Sendata	300, 75/1200	A	V.21, V.23, Bell 103, 202	F	—	—	—	—	—	—	—	—	—	—	—	E	✓	✓	✓	PoA
V22/Sendata	1200,	AS	V.22, Bell 212A	F	✓	✓	—	—	—	—	—	—	—	SC III	—	E	✓	✓	✓	PoA
V22AD/Sendata	1200	AS	V.22, Bell 212A	F	✓	✓	✓	—	✓	✓	✓	✓	✓	SC III	—	E	✓	✓	✓	PoA
Shuttle Datacomm — 30/456 St Kilda Rd, Melbourne 3004																				**Tel: (03) 267 1011**
Cicada 312	300, 1200/75	A	V.21, V.23	F	—	—	—	—	—	—	—	—	—	—	—	E	PS	✓	✓	$279
Shuttle Express	1200/1200	A	V.22, Bell 103, 212A	F	✓	✓	✓	✓	—	✓	—	AD	✓	—	✓	E	PS	✓	✓	$595
Shuttle Secure 12	1200/1200	A	V.22, Bell 212A	F	✓	✓	✓	✓	—	✓	—	✓	✓	—	✓	E	PS	✓	✓	$695
Shuttle 123 AT	300, 1200/75, 1200	AS	V.21, V.23, V.22, Bell 212	F	✓	✓	✓	✓	—	✓	—	✓	—	—	—	E	PS	✓	✓	$650
Race I VM	1200, 2400, 4800, 9600, 19.2K	A	Prop. Bell 103, 212A	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	E	PS	✓	✓	$3190
Race I VM24	1200, 2400, 4800, 9600, 19.2K	A	Prop. V.22 bis, Bell 103, 212A	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	E	PS	✓	✓	$3680
Race 2 VM24	1200, 2400, 4800, 9600, 19.2K	A	Prof. V.22 bis, Bell 103, 212A	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	E	PS	✓	✓	$4080
Race BMX VM24	1200, 2400, 4800, 9600, 19.2K	A	V.29, V.27, V.22 bis, Bell 103, 113, 212A	H	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	E	PS	✓	✓	$3080
Telecom Australia, Datel Marketing — 8/518 Little Bourke St Melbourne, Vic 3000.																				**Tel: (03) 606 7907**
Leased Line Local Area Modem - 2300/Telecom	1200, 2400, 4800, 9600, 19.2K	AS	—	F	—	—	—	—	—	✓	✓	✓	—	—	—	E	—	✓	✓	$1711
Leased Line Short Distance Modem — 2200/Telecom	2400, 4800, 9600	S	V.29, V.27 bis	F	—	—	—	—	—	✓	✓	✓	—	—	—	E	—	✓	✓	$2436
Switched Network Modem — 317/Telecom	1200	AS	V.23	H	✓	—	—	—	—	—	—	—	—	—	—	E	—	✓	✓	$744
Switched Network & Leased Line Modem — 1822/Telecom	2400	AS	V.22 bis	F	✓	✓	✓	—	—	✓	✓	AD	—	—	—	E	—	✓	✓	$2424
2 Wire Leased Line Modem 878/Telecom	300	A	V.21	F	—	—	—	—	—	✓	✓	✓	—	—	—	E	—	✓	✓	$264
4 Wire Leased Line Modem 316/Telecom	1200	A	V.23	F	—	—	—	—	—	✓	✓	✓	—	—	—	E	—	✓	✓	$516
Local Area Modem — 1800/Telecom	32-72K	S	V.35	—	—	—	—	—	—	✓	✓	✓	—	—	—	E	—	✓	✓	$3672
Tel 424 Modem — 1322/Telecom	75/300, 1200, 2400	AS	V.22 bis, Bell 103, 202. 212A	F,H	✓	✓	✓	✓	✓	✓	✓	AD	✓	SC	2K	E	TC	✓	✓	$1210
Switched Network Modem — 313/Telecom	300	A	V.21	F	—	—	—	—	—	✓	✓	✓	—	—	—	E	—	✓	✓	$324
Leased Line Modem — 1600/Telecom	4800	S	V.27 bis, V.27 ter	F	—	✓	—	—	—	✓	✓	✓	—	—	—	E	—	✓	✓	$1812
Network 1200 Modem — 1900/Telecom	1200	AS	V.22	F	✓	✓	—	—	—	✓	✓	✓	—	—	—	E	—	✓	✓	$792

✓ heading applies; — heading not applicable, or information not supplied; opt/( ) optional; upg upgradable to; AS Asynchronous/Synchronous; F,H Full/Half Duplex; ADX Adaptive duplex; AD Analogue/Digital loopback; E,I,R External/Internal/Rackmount; PS Power supply; C Cable; CP Computer powered; Prop Proprietary algorithm; SC III Super Com III; SC Super Com; TCM Trellis coded modulation; NCO Network Control Option; P.O.A. Price on Application. ★ originate only;

† The information listed for these companies was current at January 1988. They were unable to provide updated information by the stipulated deadline. It is likely that price and/or products changes will have taken place, so details will especially need to be confirmed with the respective suppliers.

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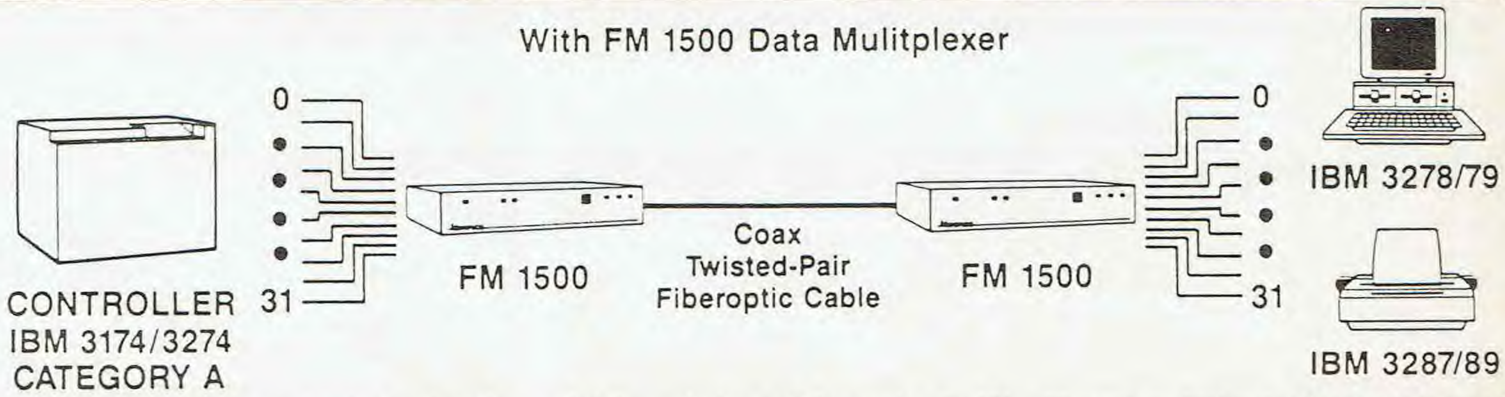
FIBRE NEWS

By Gordon Jalkemo

IFS

New 3270 multiplexers for cabling system



Integral Fibre Systems (IFS) is an Australian company which has developed a reputation for excellence in the design and implementation of fibre based local network technology.

A member of Andrew Sweeny Electronics Group, it is also sole distributor of the world leading Fibronics product range in Australia.

Fibronics, who previously developed a sophisticated in-building network management system, have just launched a new range of 3270 multiplexers for IBN cabling systems for on premises communication.

The new multiplexers FM 1500 and FM 1508 reduce cabling requirements 32 to 1 and are part of Fibronics Advanced Cabling System. Based on VLSI technology for high reliability and advanced diagnostics, the FM 1500 and FM 1508 connect up to 32 IBM 3270 peripherals to IBM 3X74 ports for distances up to 45km using fibre-optic co-axial or twisted pair cables.

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INDUSTRY

VENDOR STRATEGIES, MARKET TRENDS, BUSINESS NEWS

GPT ready to tackle the Australian market

SYDNEY — GEC Plessey Telecommunications (Australia) Pty.Ltd (GPT) has taken the first steps in its move to become one of the top players in Australian telecommunications during the 1990s.

The company has announced a new executive team which has the brief to develop products to export back to the group's UK parent company, GPT Limited, which holds a major market share in that country.

Plessey and GEC formed a joint venture of their telecommunications businesses in April with expected turnover of about $A70 million in Australia this year.

GPT intends to remain a major supplier of equipment to Telecom Australia, particularly in the areas of data communications, transmission and pay-phones, and to compete vigorously in the business telecommunications market with a comprehensive range of PABX telephone systems, mobile communications and information technology products.

Leading GPT's drive into the public telecommunications market is Ralph Green, newly announced divisional chief executive public telecommunications division.

A Plessey employee of 28 years' standing, Green leaves his position as commercial director, GPT Nottingham to join GPT Australia.

He will be in charge of GPT's public telecommunications business, including the sale of Digital Data Network equipment (DDNs), public telephones and a variety of other telecommunications transmission equipment to Telecom.

"GPT is already a major supplier to Telecom," Green said. "We aimed to enlarge this side of our business, in particular to use the local resources in design and software development which we have been building up over the past few years.

"We also plan to introduce a lot more of our products, systems and services to Telecom," he said.

Market share

GPT Limited (UK) provides a substantial share of British Telecom's telecommunications facilities. GT recently announced it had chosen GPT technology for its Flexible Access System to be installed in business centres over the next few years.

Peter Busch, general manager PABX, will be addressing the business telecommunications market. Backed by 22 years in telephone systems and telecommunications, spanning research and development, marketing and business management, Busch brings extensive experience to GPT. He was formerly with Siemens, where he managed their PABX and key telephone systems business.

"My brief is to capture substantial market share for our leading-edge range of telephone systems, especially our very powerful integrated voice and data system, the iSDX," Busch said. "We aim to be the top supplier in this area within five years."

General manager, radio systems, Richard Allen, will tackle the radio communications market. He leaves the position of managing director of Genicom to manage and develop GPT's radio systems business, including its premium performance trunked radio products and its microwave radio and mobile data systems.

"We have behind us the resources and combined product strengths of GPT, Pessey and GEC, three of the largest communications players in the world," Allen said.

"We already export radios to the UK, and intend to expand the export side of our business significantly over the next two years. We will also be penetrating the Asian market in the next two years, where we expect to make a big impact, especially with our new leading edge cellular-based technologies," he said.

"We aim to be one of the top players in this area within the next two to three years."

New technical executive Dr Jim Harvey will be supporting the company's aggressive new market thrust.

Formerly with OTC, where he was involved with network planning and then overseeing its research and development program, Harvey will have overall responsibility for technology development and strategic planning for GPT.

"My objective is to bring together the many and various skills of Plessey and GEC, in concert with the worldwide operation. A major goal is to ensure a strong R&D flow back to the UK over the next five years," Harvey said.

"GPT has major strengths in telecommunications switching, in both public and private networks, making us a world leader in advanced telecommunications and ISDN-related technology. We also have the skills and resources available to tackle major multidisciplinary programs and to support new generation system research and development," he said.

GPT Australia plans to pool its powerful R&D resources to establish itself as a leading player in the business digital communications market. Of a total staff of 400, more than 70 scientists and engineers will work in the area of new product development.

Japan's exports jump

TOKYO — Japan's exports of communications equipment to the European Community (EC) jumped 2.5 times in the year to last June, according to figures released by the Ministry of Finance.

The overall trade surplus with the (EC) increased 19.5 per cent to $US1.8 billion. While Japan's exports to the (EC) rose 29.6 per cent, imports rose 39.5 per cent to $US2.1 billion.

Europe was not the only area to see a jump in certain exports, however. Japan's trade surplus with Southeast Asian nations grew to $US1.8 billion.

Exports, especially semiconductors and cars, posted a 26.1 per cent increase to $US5.7 billion and imports rose 29.3 per cent to $US3.9 billion.

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INDUSTRY

financials

Digital earnings up

DIGITAL Equipment Corporation has continued to grow faster, with higher profits, than the computer industry. Digital reported higher sales and increased earnings for the fourth quarter of its fiscal year, which ended on July 2, 1988.

For the quarter, the company reported total operating revenues of nearly $US3.34 billion, up 25 per cent from the $US2.669 billion of the comparable quarter a year ago. Net income for the quarter rose to $US401 million, up 6 per cent from last year's fourth quarter net income of $US377 million.

For the full fiscal year just ended, Digital's total operating revenues rose 22 per cent to nearly $US11.5 billion compared with last year's total of $US9.39 billion; net income reached more than $US1.3 billion, up 15 per cent from last year's $US1.37 billion and earnings per share for the year were $US9.90 compared with $US8.53 a year ago.

Philips profit down

NV PHILIPS, the Dutch-based electronics giant, saw its net profit in the second quarter of 1988 fall 44 per cent to $US60 million, compared with the same period a year earlier. Net profit for the first half of 1988 dropped 20 per cent to $US169 million.

A Philips spokesman called the company's results disappointing. Although production and sales volumes expanded 10 per cent, earnings rose by only 6 per cent.

He said the profit plunge was partly due to the effects of exchange rates and partly to shrinking profit margins.

Philips forecast improved performance in the second half, with full-year net profit at least equal to the $409 million which it posted in 1987.

British Telecom record

FOR the year ended March 31, 1988, audit accounts show that on a turnover of 10,185 million pounds (9.1 per cent higher than last year), British Telecom made a pre-tax profit of 2292 million pounds (10.9 per cent higher). Earnings per ordinary share were up 12.6 per cent and dividends were up 12.4 per cent.

The group employed 237,205 staff at the year's end. The number of employees increased by 2808 during the year.

Wang over target

WANG Australia's 1987/88 financial year was the most successful in its history with revenue of $A250 million. The result represents a 15 per cent increase over 1986/1987 revenue and was $A13 million over target.

Wang also recorded a profit of $A11.5 million while the number of bookings taken during the year rose by 17 per cent.

According to Wang's managing director, Mike Clarkin, the results confirm Wang's position as a major growth company in the Australian computer industry.

The sale of Wang hardware contributed 70 per cent of total revenue while service, support and training accountd for 30 per cent.

Wang's revenue target for the 1988/89 fiscal year is now $A280 million while bookings are expected to exceed the $A300 million mark.

Global expansion for NEC Australia

MELBOURNE — One of Australia's communications giants is about to embark on a major export-oriented expansion program which will see it take on a significant slice of the global communications markets.

The company, NEC Australia Pty Ltd, has been developing locally-designed products, using local content and procurement, along with technical transfer of the most advanced technology from NEC Japan.

Australian engineers, working in a large range of areas of communications, have gone to Japan to conduct research, and returned home to implement development.

In doing so they have come up with a number of locally-designed products and improvements on existing NEC equipment which has greatly expanded application for Australian conditions and for those in many other parts of the world.

NEC's inhouse paging system for use in hospitals, universities, factories and building sites

The EFT-POS EFG

Spearheading this advancement are several pieces of equipment, one of which, the EFT-POS EFG modem, will have far-reaching effects on the lives of every Australian using the convenience of bank automatic teller machines.

The company's network systems department has come up with an EFT-POS modem which was completely researched and developed in Australia.

The modem is designed to meet Telecom and CCITT standards and provide high performance at low cost. It is used by Telecom for the Tran$end network, the bank to retailer carrier facility.

The modem contains multi-functional software to allow operation in five different modes, including access to Viatel.

At least 60,000 units will be supplied over three years. However NEC is now looking at the retailer end of this market with high hopes.

The EFT-POS modem will become a key part of NEC's exports to Europe and North America.

The NA-100

Another development is the NA-100 series radio system. This is a rural radio system with two audio channels plus one low-speed data channel or two audio channels plus two telex channels.

Similar equipment produced in other countries is limited to one channel and one telex only. The multichannel facility allows the use of two phones.

The range of the NA-100 system is up 90kms and the economies over the conventional laying of cable across such distances are obvious.

The principal benefit of this system is its flexibility. Through use of a personal computer, the NA-100 system can cut down on storage costs by providing completely software-programmable frequencies, functions and configurations.

Previously, eight different units have been needed to meet the various system configurations. Now all that is needed is the NA-100.

Another feature is that the unit is solar-powered, a significant advantage. The potential for such a system in the sparsely populated outback is obvious.

Export orders for the NA-100 are quickly expected to exceed 2000 units a year with a further 400 expected to be sold domestically.

The equipment was devised by the radio design and development department of NEC Australia where a further 14 new projects are under development.

The Echo Canceller

Another advancement is NEC Australia's 30-channel Echo Canceller which cancels echoes, produced by electric mismatching of various components in the telephone system.

Over long-distance speech circuits, impedance reflections on two- and four-wire terminations on subscriber lines give rise to this universal and irritating problem.

Now one unit is needed at each end of the line to cancel both parties' echoes. In the past, analogue techniques were used to suppress the echoes. But they did not eliminate the problem.

Now digital processing with high-density integrated circuits has become an economically feasible method of eliminating troublesome echoes.

The Australian unit, adapted from a Japanese design has a VLSI (Very Large Scale Integration) chip which provides it with significant benefits in the areas of quality, performance and reliability.

The delay characteristic within the VLSI circuits which handle up to 40 milliseconds delay demonstrate the advanced VLSI chip design.

The 30-channel Echo Canceller also has a microprocessor for Telecom maintenance alarm systems, a capacity to perform in temperatures and humidity higher than the Japanese model, an RS232 software interface for integration of equipment maintenance status and control plus a compact design to high-density Type 84 construction practice.

Australian engineers went to Japan for design discussion, then returned home where actual development took place.

NEC Australia sees the export potential of Echo Canceller as immense, especially in Europe, Southeast Asia and Oceania. Customers so far have included Telecom and Aussat, which have purchased almost 200 units between them.

Inhouse paging

NEC Australia Pty Ltd has also developed an inhouse/inplant paging system which has radiated power of 8.3 watts effective radio power for use in hospitals, universities, factories and building sites.

There are three bandwidths for the pagers — VHF lowband (40 MHz), VHF Medium Band (148 MHz) and UHF Hi Band (450 MHz).

In this country, NEC is supporting the UHF band because of its better coverage properties within buildings. When NEC Japan designed a new paging terminal, NEC Australia identified an opportunity to develop Australian-designed UHF transmitters and terminals.

During the next 12 months, NEC Australia will also develop a complete inhouse paging paging system for export. The cost of production will be substantially less than if it were made in Japan.

In addition the Australian paging system will have features unavailable in the Japanese systems. For instance, unlike the Japanese system there is virtually no limit to the number of pagers that can be reached during peak periods.

Globalisation

These results of NEC's technology transfer policy are marketed worldwide through mesh globalisation which allows Australia to capitalise on certain competitive advantages.

This enables NEC Australia to compete in markets outside the Oceania region which would otherwise be inaccessible. The strategy is also in line with the Federal government's export development policy.

NEC Australia's role as a corporate citizen is also seen on a different level through its sponsorship of local sporting activities in basketball, rugby, track and field and horse racing.

By next year 1500 people will be employed by NEC Australia which will continue to increase the level of its research and development and will focus its attention on becoming more export-orientated.

At the end of the last financial year, the number of hours spent on research and development totalled 96,800.

Ericsson wins major contract

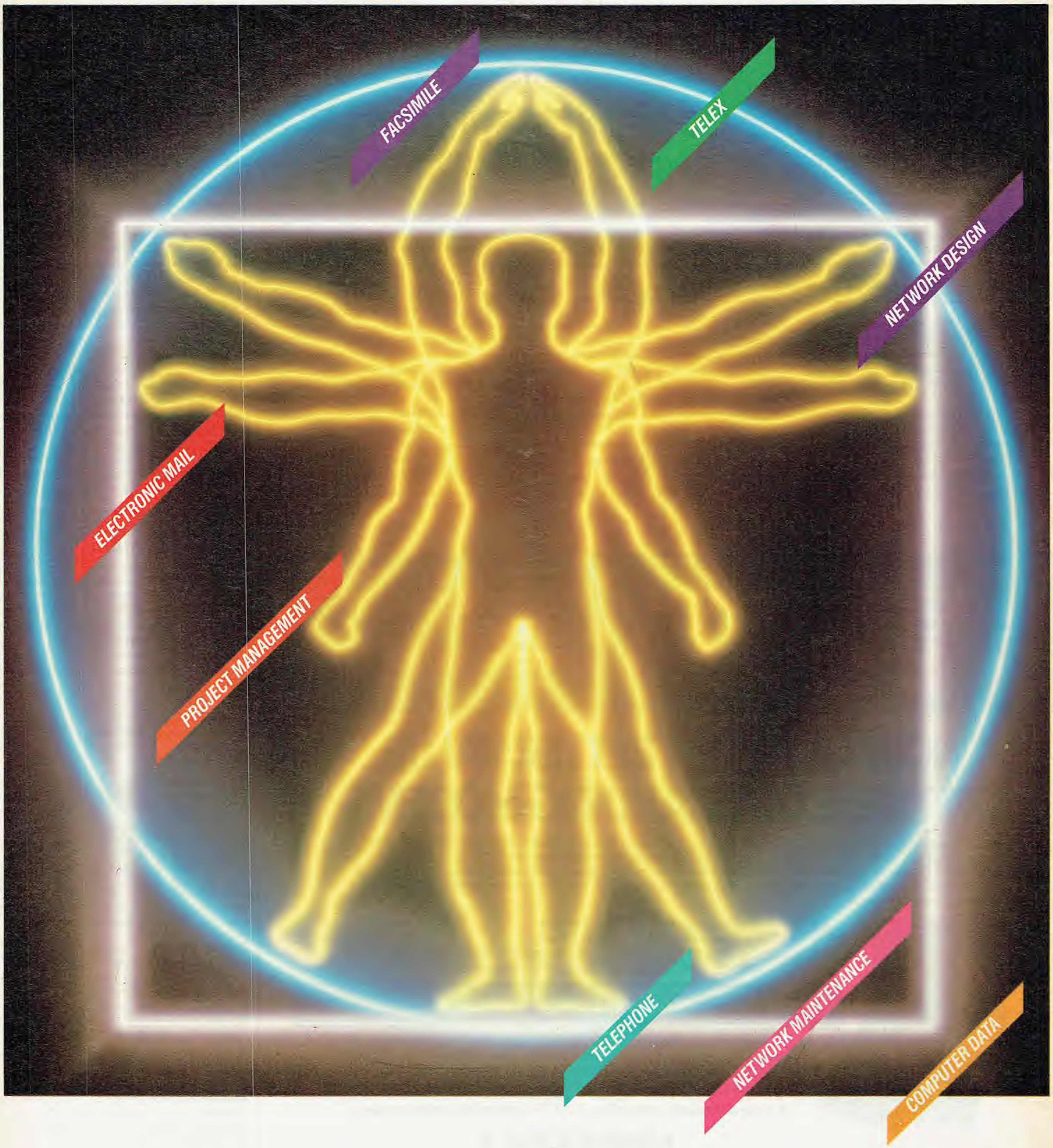
AMHERST, Mass — In a major upset, Ericsson recently landed a $US29.67 million contract with the University of Massachussetts (UMass) for a three-campus, 31,300 line network, a deal that is said to be the largest ever for a university in the eastern US.

Ericsson underbid AT&T, Northern Telecom, IBM/Rolm Systems Division, Nynex Corp and Aim Telephones — a regional interconnect company — to win the hotly-contested contract.

Northern Telecom teamed with Digital Equipment Corp to compete for the contract. Nynex submitted two bids, one proposing a private branch exchange-based system and the other pitching digital Centrex.

"We awarded the project to the lowest qualified bidder whose proposal met the specifications in our RFP," said Douglas Abbott, associate vice-chancellor for computing and information systems at UMass. He stressed that although the bid was awarded to Ericsson, a final contract has not yet been signed by either party.

The network project calls for the total rewiring and interconnection of 266 buildings at the university's 25,000-student main campus here.



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ADM 7872

INDUSTRY

Datacraft wins printed circuit board contract

MELBOURNE — Datacraft Manufacturing Pty Ltd has won a contract to manufacture printed circuit board assemblies for a communications server unit being produced by Honeywell Bull for Telecom Australia's Tran$end Network and the Telecom New Zealand TTS network.

Datacraft already holds orders valued at about $A1 million for the balance of 1988 and anticipates an additional $A2 million a year over the four years the project is expected to last.

The printed circuit board assemblies were supplied to the Honeywell Bull Eden Park assembly and test plant in New South Wales where they will be assembled into the communications server units.

The unit forms part of a Honeywell Bull Network Access Controller (NAC) for Telecom Australia's and Telecom New Zealand's Electronic Funds Transfer at Point of Service (EFT/POS) networks. The NACs, composed of communications server unit and a DPS 6 minicomputer, will act as switching nodes in the networks.

"Datacraft is able to provide Honeywell Bull with substantial Australian content in the assembly of these printed circuit boards," said John McKim, chairman and chief executive of Honeywell Bull Australia, said.

Datacraft contracts manager, Nicholas Kane, said: "The business now being generated will allow Datacraft to accelerate its investment into new technology and keep abreast of world trends."

Joint venture to distribute catalogue

DATACRAFT Ltd and the Black Box Corporation of Pittsburgh, have committed to a long term business relationship through the formation of a joint venture company to be known as Black Box Catalogue Australia Pty Ltd.

Since 1981, Datacraft has distributed the Black Box Catalogue through its direct marketing division and has built the operation to be one of the most successful of its type in the world. The manager of the division, David Anderson, has been appointed managing director of the new joint venture company which is an equal partnership between Datacraft and Black Box Corporation.

The concept of datacommunications by mail order was pioneered by Gene Yost and Dick Raub, the founders of Black Box in Pittsburgh in 1977 and the name Black Box is now well recognised among 700,000 users in over 60 countries.

stepping up

TIMEPLEX AUSTRALIA has appointed ***Richard Zagrzejewski*** and ***Tim Mountjoy*** as sales executives based at the company's North Sydney office. Zagrzejewski's previous experience covers 16 years in the communications industry where he held various sales and management positions. Mountjoy previously held sales and sales support positions for Pick-based systems and Tymnet networks with McDonnell Douglas in the UK, Saudi Arabia and Australia.

DATACRAFT AUSTRALIA has appointed ***Keith Murray*** as manager, systems and marketing in its New South Wales office. He has re-joined Datacraft after 12 months with Prime Computers where he was product marketing manager — communications. He was previously with Datacraft for four years and was senior engineer, special projects group.

AUSTRAL DATA NETWORKS has appointed ***Bob Jackson*** to be responsible for the sale of fibre optics and cabling system products. He will be responsible for local data distribution systems, including optical fibre backbones. The company distributes and supports the Fibremux range of fibre optic multiplexers and IBM cabling system and accessories. Jackson has been involved in the computer industry for 14 years, holding a variety of technical and sales positions. Before his appointment with ADN, he spent four years in the computer consulting area and occupied various technical and sales roles with both Xerox and Idaps.

Professor John Carver (left), Keith Murray and Richard Zagrzejewski.

ONE of Australia's most distinguished academics, ***Professor John Carver,*** director of the research school of Physical Sciences at ANU, has been appointed chairman of the aerospace company, AUSPACE LIMITED. He is also a director of the Australian Space Board and a member of the board of Anutec. Auspace is a wholly-owned subsidiary of the leading French industrial giant, Matra SA, and specialises in the design, development and manufacture of high technology products for space, defence and civil applications. It is under contract to the Department of Industry, Technology and Commerce (Ditac) for work on the Endeavor and Lyman space projects, and is developing an atmospheric pressure scanner for the Csiro office of space science and applications (Cossa).

POWER TECH AUSTRALIA PTY LTD, manufacturers of the Power Guard and Memory Guard range of uninterruptable power supplies for computer and communications applications, has appointed ***Dennis Payne*** to the position of Victorian marketing manager. He will be responsible for promoting the full range of products designed to ensure total systems reliability.

Michael Allard has been appointed product manager (test and data terminals) for SIEMENS LTD. He has been with the company for seven years, four of which were spent at corporate headquarters development section in Munich. His area of responsibility will include sales and marketing activities for inkjet and dot-matrix printers, fax, telex and teletex terminals as well as telephones and headsets.

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ANALYSIS

By Claire Fleig

IBM's transition to transparent SNA can be charted through three distinct phases

IBM's early data communications environment specified as many different methods of transmitting from one device to another as there were types of terminal and processors.

Then, in 1974, IBM introduced Systems Network Architecture. SNA specified standards for host-to-terminal connections in Synchronous Data Link Control, access to information stored in the host through Vtam, and connections between the host and attached devices via Network Control Program (NCP).

In the original SNA scenario, data communications took place in environments consisting of mainframe hosts, communications controllers and dumb terminals.

The communications environment today is different from the one IBM faced in 1974. Users want transparent data communications among many distributed processors made by IBM and other vendors. They also want to transmit voice, images, text and graphics at a variety of line speeds.

Notwithstanding this new networking environment, IBM is now responding to users' communications requirements in virtually the same way it did in 1974 — by giving users SNA, albeit in a repackaged and updated form. Today, SNA is often presented as virtually a new communications method.

> *‘Over the next 18 to 20 months, IBM will implement APPN throughout its processor life’*

According to many reports, peer-to-peer communications has replaced the hierarchical framework of the old SNA, making it possible to build SNA networks without host connections. A new era, non-mainframe-oriented, is about to start for SNA users — or so the story goes.

The emerging "new SNA" can be called transparent because its key operations — data storage, routing, connection and reconnection of communications lines — will function without user or programmer awareness.

The transition from hierarchical SNA to transparent SNA, which began in 1982 with the introduction of LU 6.2 on the mainframe, can be charted through three distinct but overlapping phases.

Phase 1, peer-based SNA, lasted from 1982 to 1988 and established the capability for peer-to-peer communications.

Phase 2, extended SNA, will last from 1988 to 1991 or 1992 and will extend the capabilities of SNA, so that it can function in a multivendor environment.

Phase 3, beginning in 1991 or 1992, will establish the use of transparent SNA computing in routine communications operations.

The restructuring of SNA began with the introduction of Advanced Program-to-Program Communications in 1982. Known within SNA as LU 6.2, APPC broadens the way the applications can communicate by eliminating the requirement that all applications be designed for the processor on which they operate.

The peer-to-peer communications stage provides the first building block of transparent SNA by eliminating host supervision of many low-level functions required for communications transmissions.

With APPC, devices and programs are only required to support the generic LU 6.2 protocol for complete communications between applications. The network will see the host as having the same capabilities for application handling as an IBM Personal Computer or System/36.

The host is still required, however, for some important tasks, principally network management and maintenance of the storage and routing table necessary to set up and reconfigure an SNA network.

In 1984, IBM introduced another building block, PU 2.1 (renamed Node Type 2.1 in late 1987). Node Type 2.1 provides peer connectivity at the device or processor level.

In addition, it provides the basis for communications at the applciation level via LU 6.2.

Since 1982, IBM has been progressively building LU 6.2 and Node Type 2.1 functionality into its processors. All IBM processors and operating systems now support the protocol.

In January of this year, IBM added support for LU 6.2 to NCP in Release 5 of that software, giving its 3745 communications controller and 3725 communications control unit the ability to support APPC and Node Type 2.1.

Phase 1 of the restructuring of SNA is well on its way to completion. SNA developers now have the basic programming tools and are beginning to create new applications and to migrate existing applications to LU 6.2 and Node Type 2.1.

For example, a common programming interface to migrate existing CICS and IMS applications to LU 6.2 was introduced in November 1987.

While LU 6.2 and Node Type 2.1 provide the basis for peer-to-peer connections, full peer communications require more sophisticated routing capabilities. In June 1986, Advanced Peer-to-Peer Networking (APPN) was introduced for IBM's System/3X computers. APPN enables users to communicate across a network of System/3X products without a host processor.

APPN also provides two important services in the SNA environment. One is dynamic routing. This lets a network almost instantly change the direction in which data traffic is moving, without user or operator intervention.

The second service is a directory feature that uses the file and data base information stored in each processor to let APPN identify where requested files are stored and then plan the most efficient route to that processor. So far, this product has appeared only in the SSP operating system for the System/36.

But this implementation of APPN for the System/3X line is merely the first step. Over the next 18 to 24 months, IBM will implement APPN throughout its processor line.

Most likely, IBM will include APPN functions in the VM operating system at the mainframe level. It will probably also include it in an addon card for the Personal Computer family.

An overlooked aspect of peer-based SNA is that, while it allows nonmainframe processors to communicate without host supervision, it also allows mainframes to communicate as peers, eliminating the clumsy SNA Interconnect programs required today.

However, IBM's Enterprise Networking model is too large to be handled that way. Instead, a full Enterprise Networking solution will require several mainframe peers in ongoing communications operations.

The need for transmission between mainframe peers is one of the driving forces behind IBM's emphasis on high-speed band-width management.

IBM's approach to high-speed bandwidth management is typified by the 3737 remote channel unit, introduced in June 1987 and enhanced in January 1988.

In addition, IBM will eventually introduce a higher speed version of its Token-Ring Network. Without the capability for high-speed bandwidth management, a cluster of interconnected mainframes would be a communications disaster.

Extended SNA

Phase 2 of IBM's remodelling of SNA began in 1987 with a series of announcements: high-speed data distribution via the 3737 Remote Channel-to-Channel Unit, the Integrated Digital Network Exchange (IDNX) T-1 product line and the 9750 Business Communications System.

This pattern continued in 1988, principally with the introduction of the 3745 frontend processor. The 3745, with the capacity to run two NCP's and handle peer-to-peer communications, has set the stage for Phase 2 of SNA's restructuring. During this phase, which should peak around 1992, three new SNA configurations will become commonplace: hybrid networks, small system networks and distributed networks.

Hybrid SNA networks can handle both traditional, hierarchical SNA traffic and peer-to-peer traffic. This environment is emerging now because of the extensions to Vtam/NCP and architectural changes implemented in the latest generation of communications control units, the 3745.

The emerging small-system networking environment consists of a midrange-level processor that acts in place of the host and can operate a limited SNA network environment. This environment is aimed primarily at departmental, special-purpose and remote-processing applications.

Systems due to receive this capability include communications control units (which IBM now called central control units), the Business Communication System, the high end of the Personal System/2 family and Application System/400 series.

The Extended SNA phase will see the capability for tiered communications processing, in which networks of small systems operate independently of the host for most functions but have access to host capabilities for large data storage requirements and network management.

In parallel with developments in small-system networking, IBM is continuing the distributed-processing scenario created to support the 8100 environment. With the debut of NetView Distribution Manager in late 1987, distributed processing became part of the NetView complex.

The traditional SNA environment used this approach for communications between the 8100 and attached devices. In the emerging scenario, this approach will be used primarily to support host-controlled download of applications to attached devices, with or without user knowledge and control.

Transparent SNA

The third phase of the restructuring of SNA is most likely to emerge in 1991 or 1992, when IBM should also release a new family of mainframes.

The pivotal product in this emerging environment will be Enhanced Connectivity Facilities (ECF), introduced in June 1986. ECF uses 3270 data streams and LU 2 application protocols, which allows 3270 emulation by the Personal Computer. In the emerging environment, ECF will handle three major processing tasks: data access, data transformation and distribution of application functions.

The creation of an SNA that is transparent to both users and programmers requires an infrastructure of five primary components: common interfaces for the

Continued page 29

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REGION

UPDATE ON THE ASIAN/PACIFIC COUNTRIES

NEW ZEALAND

The very model of a modern telecommunications manager

IDG News Service

THE 1990s has seen recognition of management information systems as being essential to the operation of successful businesses. The management of information, however, has been a vital part of business operations since businesses first began.

The current change in telecommunications and regulatory control is bringing to the forefront the recognition of telecommunications as another essential feature in successful business activity. Although telecommunications can be regarded as a 20th century solution to the eternal problem of business communications, it has not achieved a significant profile in New Zealand business organisations.

TUANZ (Telecommunications Users Association of New Zealand) was established in 1986 by people concerned by the apathy being shown towards the lifeblood of the New Zealand business scene, and has continued to promote the usage of telecommunications in its various forms to members and to the general communications public.

Telecommunications is not a subject in which the interested person can pick up a book and having read it, know all there is to know about it. In fact, reading all documents about telecommunications would not give a reader the total experience and understanding that can be more realistically achieved by associating with, and working in, the industry.

In recognition of this, TUANZ holds seminars, publishes newsletters and encourages interchange of ideas, problems and solutions among members. The most successful method of doing this is running an annual conference where, together with presentations of a wide variety of technical and managerial papers, members are given the opportunity to meet one another. This year it has included a trade exhibition to put members closely in contact with the suppliers and hardware being offered in New Zealand.

TUANZ invited speakers to its conference, (TUANZ '88), to present both the current situation and the background to ongoing changes in the legislation that up until recently controlled telecommunications services in New Zealand.

The responsibility for controlling expenditure and making investments in the telecommunications sector can no longer be split between the MIS manager and the accountant or whoever in the today's company has responsibility for the PABX system.

Data, facsimile, voice and video systems can now all be regarded as one overall communications environment and warrant the dedication of responsibility within a company.

As a starting point for companies seeking to fill this role, TUANZ has prepared a pen picture of this person.

The telecommunications manager (TM) should have experience in data communications and telephony, either in switching or in telephone systems. This should be accompanied by experience in administration and training with emphasis on working with a wide spectrum of staff, that is, from trainees through to senior administration.

No specific qualification is required, but a TM should have some academic achievement, for example, NZCE or a degree suitable for the position. The attainment of the qualification itself indicates a level of communications skills and the ability to achieve a good result over a period of time in a technical field.

A TM needs a wide range of skills:

☐ Technical appreciation: A general telecommunications technical knowledge is required to enable the TM to keep up with and understand developing concepts in the industry.

The TM should be able to understand communication architectures and their inherent costs both now and in the future and understand the background to costing of Telecoms and other possible common carriers.

☐ Communication skills: TMs must be able to listen to people's needs and summarise these into requirements statements. They must also be able to deliver or write clear and informative descriptions and instruction as part of their training activities with people at all levels of the company.

☐ Administrative ability: TMs are not often able to earn revenue for their companies; because of this, the cost justification of the position must be based on savings and increased productivity of others. This needs good adminstrative skills for keeping records, identifying cost excesses and implementing systems to control them.

A TM also needs to be able to understand discount cashflow techniques, to make a rational decision between leasing and buying equipment and understand equipment lifetimes and depreciation rates. The TM's area of responsibility should cover:

☐ All telephone facilities and their systems;

☐ All leased circuits for data, speech, security, financial services, video and soon.

☐ All special services, such as telex, facsimile, radio, paging, cellular phones, and mobile vehicle radios.

The TM should also be responsible for (and in many cases carry out) training staff in the effective use of the services.

Because of the importance of telecommunications to a company and the wide development of telecommunications throughout a company, it is highly desirable for the TM to report directly to the general manager.

HONG KONG

Daewoo gains foothold for telecomms products

ONE of South Korea's largest companies-firms, the Daewoo Group, has obtained a foothold in the Hong Kong market with the appointment of Arnhold & Co as the Hong Kong agent for its telecommunications unit, Daewoo Telecom. Arnhold will market and service a range of products from Daewoo Telecom, including personal computers, PABXs, telephones, telephone systems, and modem cards, Arnhold, a supplier of engineering and building products to Hong Kong and China, also offers advanced telex machines and transmission products and systems. Arhnold will begin appointing Daewoo PC dealers soon, and has begun recruiting a service team to support them. Daewoo, an OEM for several well-known US PC companies, plans to launch at least three new PC models later this year.

KOREA

Nationwide digital network plan

IN WHAT could be an ambitious move toward setting up a nationwide integrated digital services network, Korea is upgrading its communications network.

It has awarded US communications giant Timeplex a tender worth at least $US10 million to instal a digital network throughout the country. The bid, one of the largest communications network contracts ever awarded in Korea, was won amid fierce competition, according to *Computerworld Hong Kong* sources.

Timeplex will instal a backbone digital T-1 network for the Data Communications Corp of Korea, or Dacom, a joint venture set up by the Korean Telecommunications Authority, and a number of private organisations including the top Korean electronics companies such as Daewoo Electronics Corp, Samsung Electronics Co Ltd, Goldstar Co Ltd, and Korea Data Communications Corp, which is the distributor for communications equipment, including that from Timeplex.

The Timeplex network will consist of the Link family of digital high-speed network exchanges, and will provide Korea's first high-speed digital network. Link/100 and Link/2 systems will be connected by T-1 circuits running at 1.544M bit/sec provided by the Korean Telecommunications Authority.

The back end of the system will consist of Timeplex' Series III microplexers, DTM48 enduser terminals, and computers. Redundant, alternative T-1 lines will also be installed to enable rerouting between sites.

"The Koreans are planning for ISDN, and Timeplex has some ISDN products, developed in its ISDN lab in the US about a year ago, which probably helped it win the contract," one source said.

"Link/100 and Link/2 both have ISDN capability; they're part of what Timeplex calls its systems connectivity architecture, which is basically open systems for ISDN."

Colin Chan, general manager of Timeplex Far East, said the new system will make Dacom's services much more reliable. "At the moment, if a single voice-grade circuit fails, it is almost impossible to reroute the call unless a duplicate is in place," he explained. "With the backbone network, a failed main trunk can be rerouted easily."

The backbone digital network will be able to support analogue circuits, as well as handle data communications speeds ranging from 50 bit/sec to T-1 speeds. A variety of different devices, such as high-speed facsimile machines, computer-aided design and manufacturing systems, and video teleconferencing systems, will also be able to use the network.

Chan expects customers for the service to be companies requiring high-level data communications, such as airlines, banks, manufacturing companies, and publishing houses. The final cost of the system may well exceed $US10 million, according to the sources. "They cannot evaluate exactly how much it will be worth because if more users come online they will need more facilities; it depends on how successful the network is," one said. "They're talking at least $US10 million."

Currently, Dacom provides public data communications services such as leased line services for data, packet switching and electronic mail services. The high-speed digital network, to be developed over five years, will ultimately connect to the central site in Seoul 15 regional centres — Ichon, Suwon, Wonju, Chongju, Taejon, Chonju, Kwangju, Taegu, Masan, Pusan, Chunchon, Soon Chun, Ku Mis, Woolsan and Choonchon.

In the first phase, five cities will come online at a cost of $US1.5 million. This is scheduled for completion by November.

SINGAPORE

Savings bank buys 100 new generation ATMs

AS PART of a major plan to upgrade its services to its nearly 1.1 million cash on-line service cardholders, the Post Office Savings Bank of Singapore has purchased 100 new generation automated teller machines from IBM Singapore.

"The acquisition of the 100 new generation ATMs is to complement existing ATMs is but yet another step the bank is taking to ensure that service level is always maintained," said POSB executive chairman Chua Kim Yeow.

"With an account base of 3.5 million, the demand for the cash online card is likely to grow further than the current base of more than one million-cardholders.

"The introduction of the new generation ATM helps prepare the bank to meet this growth."

The new generation ATMs, which are IBM 4731s, have twice the capacity of the old for cash.

The ATMs also have the ability to direct users to the nearest ATM with cash should their own cash run low, Chua said, adding: "There are also other capabilities in the new generation ATMs which could be developed later to meet the bank's overall objective of providing more and better self banking service to depositors."

The IBM 4731 is a member of the new family of IBM's ATMs, which includes the 4736 and 4732, all supported by a common set of advanced software packages, said John Wong, managing director of IBM Singapore.

PRODUCTS & SERVICES

THE LATEST FROM VENDORS AND CARRIERS

'Intelligent workstations for the future'

SYDNEY — The new Courier intelligent workstations from Alcatel-STC "represent the strategic direction taken by the company to provide an intelligent, integrated workstation for the future," according to the manager, business systems group, Mike Butcher.

The new workstations are said to allow complete multifunction capability, including native host computer access, networked personal computer capability, image processing, and office automation from a single station.

Alcatel-STC is honing in on large corporations with an array of complex and diverse processing needs at the branch level, according to Butcher.

The population of equipment might comprise 3270 terminals, personal computers, and separate office automation equipment, and the intelligent workstation was capable of providing these functions with one screen.

The Courier unit is said to be a 3270-compatible workstation offering multiple logical units with windowing, host-all-points-addressable (APA) graphics, optional personal computer functionality, and Lan connectivity.

The two basic intelligent workstation terminal models are:

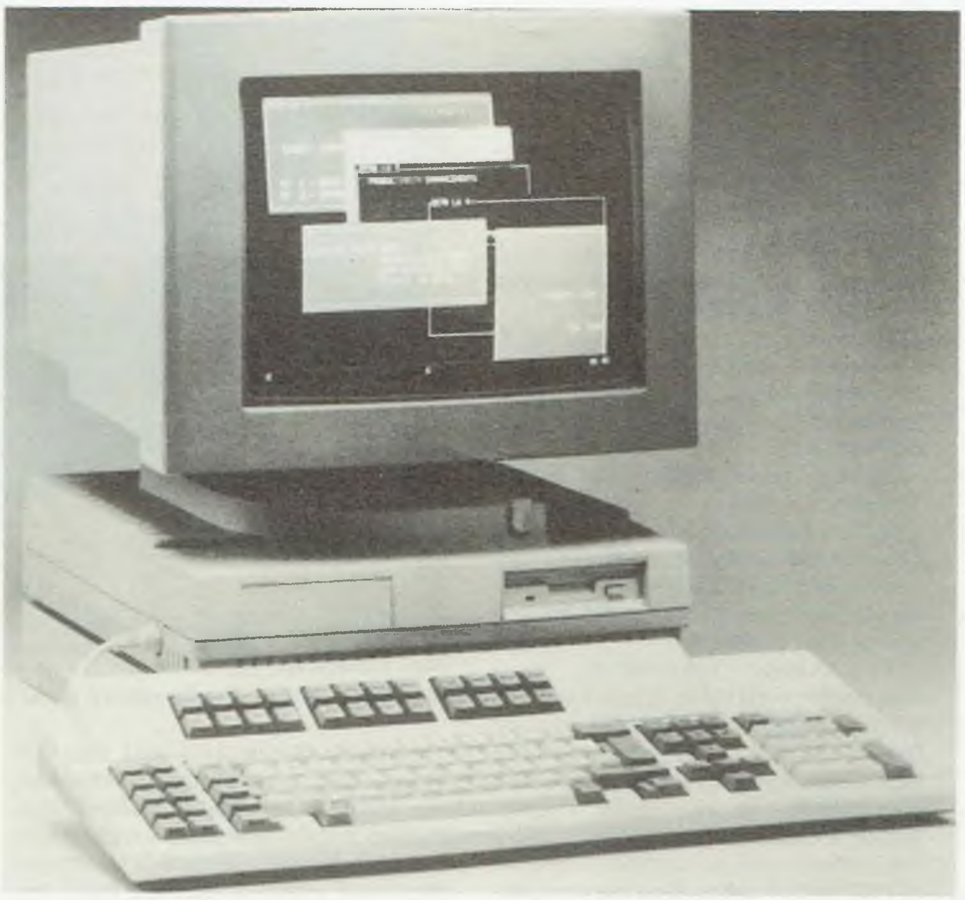
- The 94C/D, an alternative for IBM 3194 C and D displays, a 3270 MLU workstation with comprehensive windowing.
- The 92G, an all-points-addressable host graphics workstation said to be compatible with the IBM 3192G.

Each basic model addresses different user requirements, but both support modular extensions, to become a "one-workstation solution" for 3270 text and graphics, Ascii host connection, and microcomputer and Lan applications.

Both support the Courier 9000 coax protocol for connecting to Courier system-compatible control units, and the IBM Distributed Function Terminal (DFT) coax protocol, for connecting to IBM 3174 and 3274, or compatible, control units.

The 94C/D can maintain up to six active applications sessions simultaneously (six 3270, or four 3270 and two VT220), plus a notepad. Multiple sessions can be displayed together using windows, which can be moved, overlapped, changed in size or color, scrolled, or have data copied from one to another.

The 94C/D includes a 3½in floppy disk drive and an additional PC/XT compatible expansion slot, and can be expanded to support host APA graphics.



Alcatel-STC's new Courier intelligent workstation Model 940D

The model 92G is a 3270 all-points-addressable host graphics workstation which is said to be compatible with IBM 3192G and 3179G displays. Model 92G can expand to support MLU, with windowing and an optional 3.5in floppy drive.

Both models come with an Intel 80286 processor, 512 K-bytes of memory (expandable on the motherboard), an RS-232C serial port, and a 122-key 3270-style multi-function keyboard.

Modular extension to the Courier workstations provide IBM-compatible PC function, Ethernet or Token Ring Lan connection, and asynchronous communication (VT220 emulation). Further options include MS-Dos 3.3, 80287 numeric co-processor, 20M-byte hard disk drive, and extra PC/XT-compatible expansion slots.

Both models include numerous 3270 terminal features, such as extended data stream support, physical and programmable security keylocks, auto keystrokes, character type-ahead, and auto dim.

Alcatel-STC Business Systems, 5 Blue St, North Sydney 2060. Tel: (02) 925 7272.

Data cable range aims to cut costs

A NEW range of economically-priced general purpose data cables for RS232 applications has been released by Austral Standard Cables (ASC).

Called B25, the range is designed for use when a quality data cable is required but the expense of Underwriters Laboratories' approved alternatives is not justified.

ASC says the cables are fully screened with aluminium to exclude external interference, particularly flexible and easy to strip, tinned for easy soldering, and have a neutral sheath but unique core colors for ease of termination.

The B25 range will be distributed through outlets handling other ASC products, with more than 500 distribution points throughout Australia.

Austral Standard Cables, Moorebank Ave, Liverpool NSW 2170. Tel: (02) 821 9777.

Converters 'plug into any port'

THE K&C Technologies IC-11 and IC-12 converters respectively convert RS232C to fully bidirectional current loop and to RS422/RS485, thus permitting the transmission of data at speeds of up to 100K-bit/sec over distances of up to 4000 feet. The converters are only 71 x 53 x 21mm in size and plug into any RS232C serial communications port. They are powered either from pin number nine of the RS232C interface or from an external 9VDC plug-pack.

Electro Optics Pty Ltd, 84 Porters Rd, Kenthurst, NSW 2156. Tel: (02) 654 1658.

Module compatible with IEEE P959

MOSTYN Enterprises has announced the release of the Microbar Systems SBX/Com-8 Communication module. This module is compatible with the Intel SBX IEEE P959 interface specification. Due to the "low-cost flexibility and the range of mechanical options (connector panels)", the SBX/Com8 is claimed to suit a wide range of RS232C applications. Features are: compact single-wide SBX form factor; low cost per channel; eight asynchronous RS232C channels; six line interface for each channel, including modem control signals; connector panels for Multibus II, VME, and a general purpose 19in rack mount.

Mostyn Enterprises, PO Box 134, Rydalmere, NSW 2116. Tel: (02) 871 6311.

Catalogue released on subminiature connectors

CEEP has released a new catalogue covering its D-subminiature family of connectors with applications in data processing, computers and peripherals, telecommunications, aviation and aerospace, controls, testing and measurement, instrumentation, ground support services and general industry.

The 30-page catalogue is available through CEEP's Australian distributor, Multi-Contact Australia.

Multi-Contact Australia Pty Ltd, 53-55 Whiting St, Artarmon NSW 2064. Tel: (02) 438 3600.

Transition to transparent SNA

From page 27

programmer and user; automatic routing facilities for data storage, transmission and distribution; high-bandwidth capabilities for high-speed communications transmission; database storage repositories; and transformation to handle the conversion from one architectural format to another.

The basis of these components has already begun to emerge. Systems Application Architecture supports the common interface.

Automatic data routing is present in APPN at the physical level of SNA, in APPC at the logical level and in the mainframe environment Transparent Service Access Facility at the appllication service level.

In addition, the IDNX (an OEM product from Network Equipment Technologies) and IBM's Token-Ring Network architecture and 3737 Channel-to-Channel Unit provide the capability for high-bandwidth communications at T-1 (1.544 M-bit/sec), T-3 (45 M-bit/sec) and beyond. IBM is experimenting in the laboratory with transfer rates of more than 300 M-bit/sec.

The data storage infrastructure is also in place under the IMS, DB2 and SQL/DS; it will now be implemented at the Personal System/2 level by the Database Manager in OS/2 Extended Edition.

IBM's objective for transparent SNA is to make the entry, storage, processing, transmission and management of communications traffic across a global network possible with little effort from the user. This will make it more in line with the Open Systems Interconnection model, although the two models will not be exactly alike. If IBM can fulfil these goals, SNA will operate globally as easily as a personal computer operates locally.

● *Claire Fleig is director of systems research at International Technology Group, a research and consulting company specialising in the IBM market.*

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PRODUCTS & SERVICES

Printer control for NetWare Lans

MICRO Networks has released Network Assistant Plus in Australia after signing an exclusive distribution agreement with Cybertek, its California-based manufacturer. Assistant Plus allows printers on a NetWare-based Lan to be accessed from any workstation, rather than via a file server. This eliminates the need for physically attaching printers next to a file server. Designed with the features of NetWare in mind, it is the only printing utility which works with 2.1 and 2.0 versions of NetWare. Most software packages do not support network printers, so the user is forced to exit a program to change printers. But Assistant Plus is able to manage the printing process from within any application program. Assistant Plus gives the user control over many NetWare capabilities, such as printer selection, print font and queue control, sending messages or restoring deleted files — while running any software application program. Network Assistant Plus was awarded US Lan Magazine's product of the year in 1988. It is available at Micro Networks at $A940 per file server.

Calvin Rowley, Micro Networks Pty Ltd, Unit 1, 1 Gurrigal St, Mosman, NSW 2088. Tel: (02) 969 6922.

Multiple environment cards

SYDNEY — Computer Networks, described as one of Australia's fastest-growing suppliers of networks and associated networking products, has expanded its product range with the release of a range of Token Ring networking cards.

Called the Amtec Token-4 and the Amtec Token-10, the cards have been designed to work in multiple software environments, including Novell's Netware (and Computer Network's OEM version of Netware), TCP/IP, Banyan Vines, and Map/Top/Iso.

Local-area networks (Lans) of up to 255 nodes — stations and servers — can be supported by each system. This number can be extended through internetworking.

As the name implies, the Amtec Token-4 operates at 4M-bits/sec. However, Computer Networks says the Lan provides sophisticated networking performance and management capabilities beyond those of other 4M-bits/sec Token Ring products.

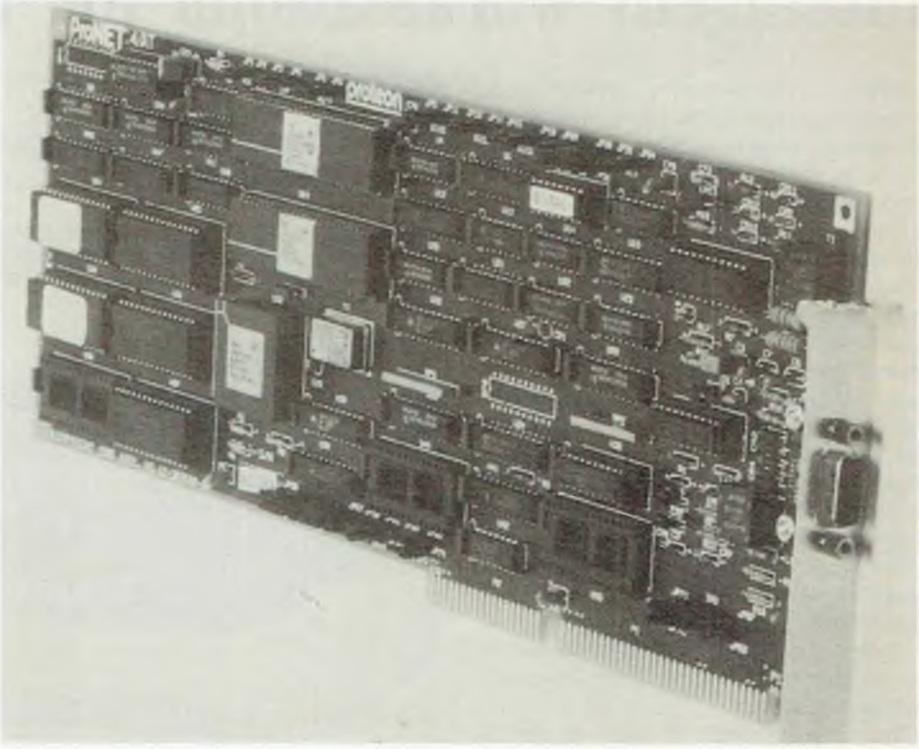
The Amtec Token-4 is plug-compatible with IBM's Token Ring networking system. Its features include IBM PC, PC/XT, PC/AT and compatible host interface systems to enhance IBM networking, an intelligent chipset which includes self-diagnostics and a full IBM network management superset of IEEE 802.5 Token Ring passing protocol, and a full range of network accessories, including intelligent multistation wire centres and powerful management software.

"Designed to the IEEE 802.5 local-area network standard and the IBM Token Ring Network implementation, the Amtec Token-4 adds multi-vendor, multi-network capabilities to IBM-based networking environments," Computer Networks' technical manager, Brian See, said.

"The system's modular design allows for easy installation and maintenance. It allows users to enlarge their systems easily. Token-4 also bring to PC and compatible users all the functions of large systems or wide area networks."

The Token-4 cards come with a range of accessories, which include multistation wire centres and an advanced network manager.

The Amtec Token-10 is a 10 M-bit/sec high-performance card designed for Token Ring Lans. According to See, it is designed for users who need consistent maximum data throughput.



The Amtec Token 4 networking card — plug-compatible

Kimtron 220 range of terminals

TRILOGY Business Systems' Datatel mainframe products division has released the Kimtron 220 range of terminals.

The KT-220 has DEC VT-220, VT-100 and VT-52 emulations and is available with 14in diagonal, green or amber display. The standard KT-220 has three pages of 24 X 80 or two pages of 24 X 132 display memory. There are 30 function keys programmable by the operator or down loadable from the host CPU.

Three additional keys in the middle cluster will be useful — "Line Feed", "Back Space" and "Escape". Normally two key sequences are required to obtain these functions.

The advanced model has all the features of the KT-220 but supports dual host and multiple windowing.

The KT-220/PC, while incorporating the above features, allows 24 or 25 rows X 80 or 132 column format and has a mode for Dos and non-Dos multi-user PC solutions. It can also be used for Xenix multi-user PC solutions and features a 5161-style keyboard.

All models feature screen saver, have tilt and swivel adjustments, vertical scrolling, horizontal scrolling, 80 column in 132 column. Thirty bytes of answerback codes can be programmed in non-volatile memory.

There is also a main data port, DB25 male or female RS-232C, with main port options RS-422 or current loop. The auxilliary printer port is standard with DB25 female RS-232C.

The KT-220 advanced and KT-220/PC models also feature an auxiliary port for printer or data.

Trilogy Business Systems Pty Ltd, Datatel Mainframe Products Division, 19 Raglan St, South Melbourne Vic 3205. Tel: (03) 690 4000.

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Audiotext system for 0055 and independents

PROFESSIONAL Australian Systems Pty Ltd (PAS) has developed Intertalk over the past three months to coincide with Telecom Australia's introduction of the 0055 service.

Intertalk enables virtually any organisation to provide an information service over the telephone to its clients or the general public.

This is a telephone information service provided by Telecom and various companies that allows callers to dial an 0055 prefix, then five additional digits to access a specific piece of information.

The companies providing the information share in the revenue with Telecom. "However, companies that wish to set up their own information service, inside 0055 or not, may easily do so with the Intertalk system," said PAS' manager (Sales and Marketing), Bruce Wilkinson.

The Intertalk product meets Telecom's specifications and can be installed as either a 0055 service or as a normal telephone number service.

When installed as a normal telephone number service the provider can offer the public access to information or advertising messages on the company's products at the cost of a local call. "This will appeal particularly to organisations wishing to provide a service to a particular client base," Mr Wilkinson said.

Intertalk consists of a dedicated computer system with facilities for handling up to 200 telephone lines and storing several thousand pre-recorded voice information segments.

The system is designed and manufactured in Australia and therefore has complete implementation and support services available locally, PAS says.

The system can also be expanded to include interactive capability so that people can select information or conduct transactions. This mode is used for telephone banking and telephone shopping applications.

Professional Australian Systems, 5 Cochrane St, Mitcham Vic 3132. Tel: (03) 874 2233.

Plastic packaging for chipsets reduces costs

TEXAS Instruments has announced plastic packaging for its TMS380 token-ring chipset. The development of plastic technology reduces the cost for token-ring network adapters, while maintaining the same quality and reliability levels as the original ceramic packaging.

Plastic packaging results in a 10-25 per cent immediate savings for TMS380 customers, Texas claims, lowering the cost for token-ring adapter products in the market. Andy VerHalen, vice-president of marketing for 3Com's distributed systems division, acknowledged the significance, saying: "The demand for IBM compatible token-ring products, such as our TMS380-based TokenLink and Tokenlink Plus products, is steadily increasing. Lower cost packaging from TI will help us reduce the cost per connection and accelerate the growth of our token-ring products."

Two of the members of the TMS380 token-ring chip set will be offered in footprint-compatible plastic packages: the TMS38010 Communications Processor and the TMS38021 Protocol Handler. These offer the cost savings of the plastic packaged product, and require no changes to board layout or manufacturing. They also eliminate design or manufacturing engineering expense for an immediate cost reduction of TMS380-based token-ring products.

The TMS38010JDL Communications Processor, currently offered in a 48-pin ceramic dual-in-line package (Dip), will now also be offered as a TMS38010NL, packaged in a 48-pin plastic Dip. The TMS38020JDL Protocol Handler, currently offered in a 48-pin ceramic Dip, will be complemented by the TMS38021 Protocol Handler offered in a 48-pin plastic Dip. The TMS38021 Protocol Handler offers complete compatibility with the TMS38020JDL Protocol Handler, yet it adds additional functionality when applied in bridging.

Semiconductor division, Texas Instruments Australia Limited, 6-10 Talavera Rd, North Ryde NSW 2113. Tel: (02) 887 1122.

Pulse releases data on transformers

PULSE Engineering has recently released technical data on its new range of transformers for ISDN-S interface.

The S-interface is the standardised four-wire digital telephone access point defined by the CCITT I-series recommendations for the Integrated Services Digital Network. The Pulse transformer provides isolation for the line card or the terminal from the line; it is also a way to provide phantom power feeding the terminal over the S-loop. Each end requires a transmit and a receive transformer. The Pulse transformer is built on toroid cores and is PC-board insertable. A well-designed winding arrangement optimises leakage inductance, interwinding and distributed capacitance.

Seven types are available, designed around AMD, Intel, Mitel, Motorola, National, Siemens and AT&T integrated circuits.

Clarke & Severn Electronics, PO Box 129, St Leonards NSW 2065. Tel: (02) 437 4199.

INTERRUPT

CARRIER SERVICES, PABX, VOICE SYSTEMS, BYPASS

Epidemiologists of the industry identify 25 distinct viruses

WHILE it is impossible to predict the exact form that a software virus will take, there is one activity common to all viruses: They must write to the disk and change files or system areas in order to infect the system or local network.

The National Bulletin Board Society has compiled a "live virus" database over the last 18 months, containing more than 25 distinct viruses. Most systems and networks, however, have fallen victim to one of the seven most common viruses. They are:

■ **The Pakistani Brain.** This is now the most prevalent virus, so called because it originated in Pakistan. It infects the boot sector and replicates, infecting every floppy disk inserted into the system. It is generally considered to be an almost benign virus because it doesn't destroy files by itself. It does, however, substantially slow down system processing and will conflict with programs that require a specific version of the Dos operating system.

■ **The Jerusalem Virus.** This virus, which originated in Israel, infects executable programs, such as .COM or .EXE files. It resides in the memory and infects every program that is executed. It will also destroy file allocation tables and scramble data on the disk.

■ **The Lehigh Virus.** This virus recently spread throughout Lehigh University in Bethlehem, Pa. Infecting the operating system and COMMAND.COM, it replicates four times and then destroys the hard disk.

■ **The Alameda Boot Virus.** This infects the system's boot sector. It then infects any diskette inserted during the boot and scrambles the data.

■ **The Friday the 13th Virus.** Named after the date, not the movie, this virus infects every .COM program. Every Friday the 13th, it deletes whatever program is executed on that day.

■ **The Command Virus.** This virus infects COMMAND.COM and will scramble the file attribute table, which is the master table that tells the operating system how the files are structured, organised and segmented. Without this table, the operating system can't find anything. After a certain number of infections — the number varies depending on the strain of the virus — the Command Virus crashes the system, and perhaps the network, and destroys all the files.

■ **The Scores Virus.** This virus, which has hit some 12,000 Apple Computer Macintoshes, including Macintoshes at the National Aeronautics and Space Administration, is designed to replicate for a specified number of days, followed by several days of dormancy. Thereafter, when the user attempts to save information in a file, the virus will not let it.

If the Mob corners the market, you might get a paperless office in a way you didn't envisage

OFF LINE

BY NOEL BENNETT

CHAIRMAN: Da heat's on, brothers and sisters. Da heat's on. As dat wise man, Aristotle once said: "If it's too hot in the kitchen, den call da fire brigade." Like the liquor business in da thoities. It's finished. So, business people as we are, we got to look ahead. Into the future. The next 10 years. We'se gotta strategise. The drug business is gettin' too hot. Too hot. So, what's next? Dat's what's dis meeting's all about.

We's gotta tink. You know what de motto of the big one is, Tink. So we all gotta do some tinking. Ok, de meeting's to begin. Sister X. What you been tinkin?

Sister X: Thank you, Mr Chairperson. As you well know brothers and sisters, at our last meeting I proposed introducing high-technology into our call girl service. We began with a pilot operation to determine the feasibility of the basic concept. We engaged the services of both computer and telecommunications experts to establish a highly efficient service both for our clientele and our employees.

The latest in computer equipment was installed and employees issued with telephone pagers. Not only were we able to keep accurate and timely billings to ensure our cash flow was maximised and ensure that employee productivity was enhanced, but we could also determine demographics, trends of favors preferred and so put into place a strategy to maximise to the utmost on our business strengths and investments made.

Chairman: Tanks for your report Sister X. You have been using all the right woids. A Harvard education gives da right tone. We could all do wit a bit of tone. We could all do with results too, Sister X, da bottom line as da professor would say. You was busted.

Sister X: Yes, Mr Chairperson, due to an oversight . . .

Chairman: You was busted. As Aristotle said: "If ya's counted out, taint no use in blaming da canvas." I don't tink, to use your woids, Sister X, dat de enterprise showed sufficient returns to justify the injection of added capital to take the pilot study into full operational mode. I been reading the *Business Review* too. I got de woids right.

Anyone else done any tinkin'? Brother A?

Brother A: I think the future's in hacking. Sure, the college kids have cornered the market now, but I think it's time for takeover. It's sound business principles to let the small entrepreneurs explore the market and show the opportunities and then for Big Business to move in, rationalise and set pricing and generally impose order so that the customer can operate in a structured environment.

Chairperson: Not structured, Brother A, destructive — to us. Hackin's public enemy number one. As Aristotle said: "If you wanna walk on the grass, make sure you're stilts are high enough."

Na, you'se all a big disappointment. You're all hot air. Dose fancy college degrees have filled you'se all wit wind. As Aristotle said: "When da plate's on the table, look out if your knife's missin'." I been tinking. Paper. Dat's it. And I don't mean the foldin stuff.

Sister X: Paper?

Brother A: Paper?

Chairperson: The stuff that people can't get enough of. Ever seen one of dose computer printers? Dose fax machines. Gorge themselves on it. Can't get enough of it. I know. I pay the bills here. One hundred and fifty dummies out dere on three floors just feedin' those machines with so much paper dat they must tink every day it's Christmas.

> ‘ *When da plate's on the table, look out if your knife's missing* ’

And da building inspector tells me we have to strengthen da floors because we got so many filin' cabinets . . . full of paper. And my friends on the Street tell me dat da books and news-stand stuff telling da mugs how to use all dat high flown gear . . . a bonanza.

So. We'll corner da paper market. All legit. Up front. OK? No complaints. OK? Good. Let's go. As Aristotle said: "Da money's not in da shoes, but in da shoelaces."

American eagle swoops on the Shadow Hawk

IDG News Service

CHICAGO — Who knows the password to gain entry into the Bell Laboratories national network? The Shadow Hawk knows, says the US attorney in Chicago, who has alleged that someone using that *nom de guerre* stole $US1.02 milllion worth of AT&T proprietary software by hacking his way into the Bell Laboratories national network.

Whoever the Shadow Hawk is, he reportedly copied 52 AT&T proprietary programs between July and September 1987. US attorney Anton Valukas alleged that the Shadow Hawk is Herbert Zinn, 18, of Chicago.

Valukas' office filed criminal juvenile delinquency charges against Zinn, alleging that he penetrated a Bell Labs network linking sites in Naperville, Ill, Warren, NJ, and Burlington, NC as well as a computer at Robbins Air Force Base in Georgia.

The complaint contends that Zinn then published the passwords used to break into the network on electronic bulletin boards in Chicago and Texas. "Our office will not comment on any of the techniques used," said Bill Cook, assistant US attorney here. "What he did will come out in the course of the trial."

Zinn was not immediately arrested, but was questioned by FBI agents and the US Secret Service, which enforce the Federal Computer Fraud and Abuse Law of 1986. Federal agents then seized three computers at Zinn's home, including an AT&T Unix PC with 62M-bytes of memory.

If convicted, Zinn could spend the next three years — until he reaches age 21 — in a federal prison for juvenile offenders, Cook said.

Agents were led to Zinn's address by telephone numbers stored on files in the AT&T computers that fell victim to the electronic break-in, Cook said. Federal agents contend that Zinn's Unix PC contains some or all of those programs in its hard disk memory.

AT&T would not comment on the Federal complaint, but a spokesman said it would "co-operate fully" with the Federal government. "AT&T takes the security of its network very seriously," the spokesman said. "We employ a whole range of network and computer security tehniques and strongly support laws that address issues of communications piracy and fraud."

Zinn's age means the public will have access to the government's prosecution of a hacker, many of whom are younger, said Donn Parker, a senior management consultant at SRI International.

Republicans' convention net 3km long

NEW ORLEANS — Befitting the Republican Party's image of fiscal restraint, its national committee managed to finagle its way into free use of a 120-node nework for this year's convention.

A package deal with the city of New Orleans required that the city pick up a leasing tab in excess of $US500,000 for the convention network, made up mostly of hardware and software from 3Com and Tandy.

After the departure of the party faithful, Tandy planed to donate the network to the city, said Julie Perrier, a spokeswoman for the convention who oversaw the computer network.

Staffers at the convention relied on a roughly 3km-long 3Com network, situated within the New Orleans Superdome, to link participants and support committes spread out inside the stadium and in local hotels.

The Republicans' temperate approach to information processing was reflected not only in the cost of the network — about $150,000 less than the local-area network installed at the Democratic National Convention — but also in overall system size.

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NEWS

Cost-attractive card a candidate for export

By Noel Bennett

SYDNEY — The Australian Nuclear Science and Technology Organisation (Ansto) has developed an IBM interface card which it believes will be most cost-attractive to universities and commercial and other organisations running large Ethernet Lans.

As with another product, a Pascal compiler for mainframes, Ansto is preparing to market the hardware/software product overseas. Essentially, the IBM interface card is said to allow fast and efficient connection of asynchronous devices, including standard personal computers, via an Ethernet network, directly to IBM mainframe computers.

The director of the computer centre, Dr Don Richardson, said it was increasingly important that desktop terminals be able to access the vast information stores of onsite mainframes — a problem exacerbated in a multivendor computing environment.

The low cost which the interface card brings to this connectivity problem is that a single synchronous terminal costs about $A2000, compared with $A500 for an asynchronous terminal and to configure an ordinary personal computer for synchronous communications means spending at least $A1000 more.

The average sale of the hardware/software combination was expected to be about $A50,000.

The device is incorporated in Ansto's new fibre-optic Ethernet network with coaxial segments throughout the computer centre building brought to fruition by Network Solutions last September.

Describing the Ansto site as one "giant Ethernet network", Network Solutions' Richard Fremantle said some 160 users were connected in the network to 18 Bridge CS/200 TCP/IP terminal servers via RS/232 cabling while PC networks would be connected via thin Ethernet coaxial cable and multiport repeaters to provide integration for subsidiary networks.

In the Ansto application, terminal-to-host communication speeds reach a "highly acceptable" 9600bits/sec within the 10M-byte/sec limitation of the Ethernet protocol of the new network.

Meanwhile, Richardson said the new Pascal 8000 compiler for IBM mainframes, developed from a product first brought to life in the early 1980s, would sell for about $A750, far cheaper than existing competitive products.

While it was still "early days", this product, and eventually the IBM interface card, were expected to be sold in the US.

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Local Loop

Support for exhibition

JAKARTA — Communications Indonesia 89 has obtained substantial international support with definite confirmation of official national participation by West Germany, France and Australia.

Italy and the UK are among the other nations for which official participation has been recommended so far, according to a progress report issued by the conference organisers. To be held in Jakarta from March 29 to April 1, the 1989 exhibition/seminar follows similar events in 1985 and 1987. The organisers say many of the 147 companies from 14 countries which participated in 1987 have already booked stands for the 1989 event. Further details of Communications Indonesia 89 may be obtained from Australian Exhibition Services Pty Ltd, Suite 3.2 Illoura Plaza, 424 St Kilda Rd, Melbourne 3004. Tel: (03) 267 4500.

Company's new premises

ADELAIDE — The South Australian offices of Computer Sciences of Australia are now operating from new premises in Technology Park to cope with staff expansion.

Three years ago the company had 16 people in South Australia. It has now expanded to nearly 90 and is expected to reach 100 in a few months.

Included in the staff are 35 qualified engineers and 40 computer scientists and the company's main target in the State is work in the defence industry.

Contract challenged

WASHINGTON — The $US3.6 billion contract awarded to IBM by the Federal Aviation Administration to overhaul and upgrade US air-traffic control systems has been suspended by the General Services Administration. The contract, the largest ever won by IBM, was challenged by Hughes Aircraft Co, which was a strong contender for the contract. The contract will remain in suspension pending a GSA decision. Officials said IBM won the contract because it was the lowest bidder, possibly by as much as $US500 million less than Hughes Aircraft.

Network by Motorola

PARIS — The Radio-Telephone Systems Group of US-based electronics and semiconductor manufacturer Motorola has been chosen to supply the first phase of a digital cellular communications network to UK-based Cellnet. The original memorandum covering this network was reportedly signed by 13 European countries. Cellnet plans to spend about $US800 million for the new system during the next five years. The company believes the value of the initial system — newly-designed Motorola base stations and EMX-2500 switches — is about $US100 million. Shipments will begin in the fourth quarter, and the initial system is expected to be operational by July 1991. The Motorola stations will be manufactured in the UK and the switches will be supplied by DSC Communications Corp.

Plessey-Soviet protocol

LONDON — The USSR Ministry of Telecommunications' first protocol of intent with any Western company has been signed with GEC Plessey Telecommunications (GPT), UK. The protocol, providing advanced telecommunications facilities, involves the creation of a joint venture operation between GPT and the Moscow Local Telephone Network Authority. Facilities provided will be primarily for foreign visitors and the resident foreign community. Richard Reynolds, managing director of GPT, said: "The signing of this protocol represents an important inroad for GPT. We are especially pleased to have succeeded in the face of tough international competition. I anticipate that the success of this first GPT Soviet project will form the basis of a long-term partnership, paving the way for future business opportunities in the Soviet Union."